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THE PROBLEM OF PROSTATISM*

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After a brief historical sketch, I shall discuss infection and malignancy incident to prostatism, and suggestions for improving the treatment of both.

HISTORICAL SKETCH

Although perineal section for stone was practiced by the ancients, the prostate was not discovered until 1550 by Nicolo Ulassa of Venice. At the same time Ambroise Paré was evolving improvements upon the instruments previously employed for breaking up obstructing "carnosities", transurethrally. Suprapubic cystotomy was first done by Pierre Franco in 1556. Though progress was to lag for the next 350 years, these three routes continue to compete for the attention of the bladder surgeon.

In 1886 Edison put a cold light in Nitze's cystoscope, and the American Association of Genito-urinary Surgeons was organized in New York. Since then events have transpired rapidly. By 1890 deliberately planned prostatectomies were done through the perineal route by Watson, of Boston; Wishard, of Indianapolis; Belfield, of Chicago; and Goodfellow, of Arizona; and through the suprapubic route by McGill, of Leeds, and Fuller, of New York.

Rejecting the Bottini instrument in 1898 as unsafe and inefficient, Young decided that accessibility was necessary for better enucleation. This was attained by passing two fingers into the rectum and pushing the gland upward into the suprapubic wound. Then he devised a tractor, pulled the gland into the perineal wound (1903), and accomplished a clean complete, anatomic enucleation entirely under vision, which will forever remain a monument to his creative genius. Before this time these operations were a blind and bloody business. Hemorrhage, uremia, and sepsis contributed a mortality that was somewhat higher for the suprapubic route, but many of those patients surviving the operation by the perineal route incurred dysuria, incontinence, or rectal injury.

Suprapubic operators blamed perineal surgeons for leaving behind intravesical intrusions, and the latter accused the former of failure to remove intra-urethral obstructing lobes. Two physiologic factors were then developed: First, a period of drainage for stabilizing a balanced ratio between kidney output and blood retention; second, large quantities of water to wash out infection. Young used up to 12,000 c. c. in 24 hours.

Geraghty and Rowntree brought out the P. S. P. renal output test in 1910; Folin and Dennis the chemical determination of nitrogen bodies retained by the blood, in 1914.

Urinary obstruction interferes with the elimination of uric acid and urea early, creatinin late. After decompression, satisfactory elmination of all these compounds is promptly resumed whenever kidney tissue is but slightly impaired, but Goldstein showed (1918) that high creatinin retention never came down when kidney tissue was more than half destroyed; therefore

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these patients cannot become safe for surgical procedure. Thus, after delay and kidney destruction, many fatalities have been due to the terrible triad: obstruction, stasis, infection, whether the bladder was drained by cystotomy, catheter, or not drained at all.

Efforts at transurethral relief of bladder neck obstructions were resumed by Guthrie in 1834, but this subject had to wait another century for the development in mechanical equipment to catch up with the requirements of surgical conceptions.

In 1926 Maximilian Stern introduced the resectoscope. After endoscopic visual improvements by McCarthy, and the construction of a power unit by Theo. Davis, which was dependable for hemostasis as well as cutting under water, successful transurethral electrosurgical resection of most bladder neck obstructions became an accomplished fact for competent operators in the early thirties.

Obstructions differ fundamentally in type, as shall be seen later. The clean complete removal of the entire pathologically obstructing mass is demanded, leaving no devitalized tissues behind. Otherwise, a condition obtains which resembles an incomplete abortion in pathologic principle.

VanDuzen (1939) demonstrated that there is no anatomic capsule separating the prostate from the bladder, and that the glands are at first plain tubular. At the age of 16 they have become racemose, and as sexual maturity advances the acini dilate considerably, and increase in number tremendously. Lowsley (1912) showed that prostate hyperplasias arise from muscle cells, located in the urethral wall (or floor) of the postspermatic portion of the prostate, of lower Müllerian duct origin, developing similar to uterine myomas. Deming (1939) concluded that multiple suburethral spheroids, developing simultaneously or consecutively, first distort the urethra in contour, elongate it in extent, and finally compress the prostate tissue into a flattened out lamina or surgical capsule, against the fascia of Denonvilliers. It is between these confluent hyperplastic spheroids, and the compressed lamina of prostate tissue, that the so-called plane of cleavage is encountered. Following along this in all directions, the pathologically obstructing mass is removed while the anatomic prostate gland remains in a reinvigorating environment, to enjoy a better blood supply, since it has become freed of compression, and relieved of infection which was consequent upon obstruction.

The pathology of prostatism remained confused until 1931, when Randall classified five anatomic elements: Two lateral and a prespermatic lobe, an anterior, and a posterior commissure. Lesions rarely develop in the anterior commissure or the prespermatic lobe. Therefore bar formations, and the obstructing lesions arising from the lateral lobes and the posterior commissure (so-called middle lobe) are the conditions encountered surgically.

While the onset of subjective symptoms from acute retention is sudden and incidental to edema from infection, the intruding lesion is a definite pathologic entity of gradual development, often requiring years to obstruct. Progress of its encroachment and inbulging may be observed cystoscopically for perhaps a decade, and the type of prostatism accurately diagnosed, which is entirely impossible by rectal palpation.

Today the urologist has a satisfactory knowledge of surgical pathology, and three highly developed operations for its relief, each useful according to requirements, and no one of which can completely supplant the other two. The current curb service notion about electrosurgical resection is unfortunate, and often leads to disaster.

Twenty-five years ago Keys deplored the more than 20 per cent mortality subsequent to suprapubic surgical drainage. That was due to kidney destruction produced by the terrible triad. The abhorrent practice of prolonged urethral drainage is nice from the standpoint of mortuary cosmetics, but bladder paracentesis assures comfort and recovery. The former was bad for the perineal prostatectomist, but much worse for the resectionist, who makes infection inevitable by subjecting the urethra to a

month of irritation and trauma by a foreign body, before it is to be torn up by a red hot drag line in a closed cavity. Engel reports six deaths in 14 cases where indwelling catheter alone was used. Chill occurred within 48 hours. This was due to kidney infection from urethritis.

With clean residual of less than 200 c. c. output and retention but slightly disturbed, no drainage is required. When it is, Lower and Engle, Kreutzman, Duffy, and Walther, and many others have advocated the suprapubic trocar with introduction of a Malecot catheter. The Engel and Duffy instruments are adapted for cystoscopy. No fatality is reported.

FACTORS AFFECTING PROGNOSIS

Today when the mortality from prostate operations in good hands is around 5 per cent, and the mortality from unrelieved obstructing prostatism is ultimately 100 per cent, there is every right to disabuse the public mind of the traditional horror for prostate surgery which it has held over from a time when that attitude had more to justify it.

Granting three requirements, prostate surgery is now safer than other surgery of similar magnitude at the same age. They are:

(1) A clean bladder, free from infection;

(2) A reasonably good cardiovascular system;

(3) Adequate kidney function.

When infection or malignancy complicates, these essentials are sacrificed.

With the advent of the ketogenic diet, and the chemotherapeutic drugs of the last few years, urologic bacteriology has assumed an importance never realized before. The characteristics of different organism types are well known, and their behavior is understood upon identification.

The urea-splitting group of the proteus type is urologic enemy No. 1. It develops stones, destroys tissue, produces foul grayish slough, prevents healing, kills patients by exhaustion and sepsis. It is controlled by acetic acid drip locally, sulfanilamide internally.

The Gram-positive staphylococcus is prone to produce metastatic cortical kidney abscesses. Intravenous neoarsphenamin checks this invader.

The Gram-negative bacillus inflames mucous membranes, with pus formation. Mandelic acid, or large quantities of water are indicated.

Secondary infections with abscess formation about the bladder and urethra must be relieved surgically.

MALIGNANCY

Albarran called attention to prostatic cancer in 1900. Young found cancer in 21 per cent of obstructions in 1926. The report of Rich and Moore on routine postmortem serial sections in 1935, revealed the startling frequency of occult carcinoma of the prostate. Though generally of slow growth and late metastasis, the small ones may metastasize early and extensively, producing bony and visceral manifestations, without dysuria, insidiously killing many more men than the number of women who die of uterine cancer. Such a patient will not consult his doctor because of prostate trouble; nevertheless his trouble is incurable cancer of the prostate, and the blatant goat gland evangelists continue to defraud a credulous public.

Every school child knows that appendiceal colic means immediate operation. Every doctor plans for cesarean section before the onset of labor. But the clinical conduct of many patients with prostatic cancer is still about a quarter of a century behind urologic attainments.

Here irradiation has failed. Both suprapubic and transurethral surgeons are agreed that these operations are not curing prostate cancer. Only a small number of highly important genito-urinary surgeons claim cures by perineal panprostatectomy, while the lesion is still local.

SUMMARY

A brief historical sketch of the development, pathology, and treatment of prostatism is given. The importance of infection and malignancy is discussed. Solution of the problem lies along two lines.

First: The public must be educated to the importance of periodic urologic examina-

tion after 50, instead of awaiting the compelling symptoms of pain, bleeding, dysuria, retention; that once obstructed, infection is imminent, and that deliberately planned removal under proper circumstances, is safer than procrastination and urethral instrumentation; that resort to the urethral catheter whether intermittent or indwelling, carries definite hazard.

Propaganda should emanate from the State Cancer Committee for the general profession and public alike, just as it has about cancer of the uterus. Both must learn that prostatic cancer kills more people than cancer of the uterus.

Second: Recording and reporting cases to the cancer registry; decompression by paracentesis is cleaner, safer, and more comfortable, than either cystotomy, or indwelling urethral drainage; defer cystoscopy until time of operation, then under adequate anesthesia the type of pathology may be determined in about two minutes, whereupon appropriate surgery is selected and carried out immediately; no one operation can fit all varieties of pathology.

Recent modifications in perineal surgery by Lowsley, Belt, Hinman, and others, afford a flexibility to this procedure, which now merits reconsideration by those of us who viewed with distaste the radical block resection offered by Young in 1914.

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DISCUSSION

Dr. Eugene Vickery (New Orleans): Numerous articles have appeared in the literature in the last few years regarding the effect of the male sex hormone, testosterone, on benign prostatic hypertrophy. It has been recognized for many years that the testes have some controlling influence over the prostate, as castration causes an atrophy of the prostate provided it is done before hypertrophy of the gland has taken place, but castration causes no decrease in the size of an adenomatous prostate. The trend of recent investigation of the use of testosterone in benign enlargement of the prostate shows that there is no appreciable decrease in the size of the gland obtained by administration of the hormone, and in some instances acute urinary retention has occurred during its administration. Observers who have reported good results in the use of testosterone have as a rule based their conclusions on clinical improvement. I do not believe we should belittle any treatment which gives relief or improvement, but we are all familiar with the temporary relief given at times by catheterization, massage, sitz baths, vasoligation, or administration of one of several drugs at our disposal. So let us not be deceived in judging the effect of a hormone or any other substance on the hypertrophied prostate by clinical improvement alone, but let us develop an accurate method of measuring prostates before and after the use of such substances, and in addition make observations of changes in the histology of the gland. At the present time there is no conclusive proof of any reduction in size of the hyperprostate after administration of any drug or hormone.

Thus the problem of relief of prostatism remains a surgical one. Here again there are conflicting opinions as to the best procedure to be employed, and the literature is full of the pros and cons for transurethral resection, suprapubic and perineal prostatectomy.

Pathologically prostatic obstruction is divided into three general types: (1) Benign hypertrophy (adenoma); (2) fibrosis (median bar and contacted vesical neck); (3) adenocarcinoma. (cf. Randall's anatomic classification above.)

Most urologists agree that patients with fibrosis are best taken care of by the transurethral operation on account of technical difficulties encountered by the other approaches.

The late Dr. Charles H. Mayo once said that anything done to relieve prostatic cancer is wrong. However, this was before extensive employment of the transurethral procedure, and it is generally agreed that this offers a comfortable functional bladder to these advanced cancers for a period of one to two years in most instances. The difficulty in suprapubic removal of adenocarcinoma is well known. A few urologists advocate radical perineal prostatectomy in early cases of malignancy, though they admit only 5 per cent of prostatic cancers have failed to break through the capsule when first seen. Radium and deep x-ray therapy are advocated by others, in addition to removal of obstructing tissue. Personally I have felt that results obtained by radiation fail to warrant the risk of discomfort often caused by it. Some adenocarcinomas are quite slow in their progress, and in the past year I have resected for a second time a patient who came in seven years previously with a fairly extensive grade II carcinoma. Relief with a sterile urine was obtained for this period. On the second admission there was no appreciable weight loss or evidence of metastases. He had no radiation and reports now that his bladder is essentially comfortable.

It is in the removal of the entire prostate or the obstructing portion of the benign hypertrophies where we find most divergent opinion as to the method of choice. Each case is an individual problem dependent on the size of the gland, the general condition of the patient (chiefly cardiac and renal) and the skill of the surgeon in the different types of operation. Results obtained are not uniformly good by either suprapubic, perineal or transurethral approach. Necessarily any operation which has as its aim a subtotal prostatectomy should give rise to a higher incidence of postoperative difficulty than a procedure where the whole gland is removed. However, the relatively low mortality in transurethral resection for glands of reasonable size in my opinion more than offsets this disadvantage.

Dr. M. H. Foster (In conclusion): I am in such complete accord with Dr. Vickery about the failure of hormone therapy to benefit established hypertrophies, that I omitted it from the discussion entirely, instead of damning it with faint praise as he did.

Competent urologists of large experience, after carefully controlled observations, have concluded that prostatic cancer is not being cured by irradiation (cf. Rudnik, Chicago). I have obtained an adequate outlet with comfortable voiding at each of three successive transurethral resections during four years. One patient, now aged 79 years, has a fired, stony, hard prostatic cancer, but plans remarriage.

Let me repeat one thing to emphasize what is not yet generally known: Abandon indwelling urethral drainage in favor of paracentesis, through the top of the bladder; learn how easy, comfortable, and safe, prostatic surgery can become when artificial drainage is done temporarily through an artificial opening, and the natural channel kept physiologically at rest while it is traumatized and infected.

MANAGEMENT OF CHRONIC PROSTATITIS*

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The subject under discussion today is generally recognized by the medical profession at large as a very common condition in adult males of all walks of life. It is certainly the most frequent office problem seen in urologic practice. That its importance and frequency are being recognized today is manifest by the requests for reports regarding prostatitis by insurance companies and by the increasing number of patients referred for examination and treatment. Infection of the prostate and seminal vesicles will be considered as one disease since any pathology involving the one invariably includes the other (Wesson). It is of significance to point out that a large percentage of this group of patients under the classification of "non-venereal prostatitis" has never been infected with the gonococcus. The condition may be described as a chronic pyogenic infection of the prostate having its origin by direct extension from the urethra, or entering through the blood stream or lymphatics.

Because of the facts just enumerated a review of the symptomatology, diagnosis, and management of pyogenic prostatitis will be presented with special emphasis on measures used in treatment today.

SYMPTOMS

If one were to list the symptoms ascribed to prostatitis we could be easily induced to

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believe that an infected prostate gland is the source of all disease. An attempt however will be made to classify the symptoms under two headings, stressing the more common and those of most diagnostic significance.

SYMPTOMS WITHOUT PAIN

1. Urethral discharge: The so-called "morning drop" which may be just enough to seal the meatus. This is probably the most frequent finding and is often the only reason the patient consults a physician. The discharge is usually of a mucopurulent character and is seen only in the morning or when the patient has not voided for a long period of time during the day (four or five hours).

2. Frequency and urgency of urination and occasionally nocturia: These are always secondary to posterior urethritis and trigonitis. In these cases microscopic pus is found not only in first glass but a few small clumps or free cells in the second glass.

3. Generalized feeling of being under par: Patient tires too easily and is especially fatigued in the evenings.

4. Mental: The patient may be sluggish and indifferent and unable to concentrate. Other changes seen are irritability and nervousness.

5. Sterility has often been thought to be due to chronic prostatitis but actually sterility as a direct result of infection of the gland must be infrequent as we see daily individuals with a marked degree of infection who have high fertility index.

6. Sexual symptoms: Contrary to what we would rationally expect prostatitis usually causes no sexual disturbances, but it may be responsible for every phase of disturbance from mild incapacity to complete impotency. Erections may be insecure, painful, or absent entirely. Ejaculations may be sensationless, painful, premature, bloody or they may occur without erections. A too frequent desire for intercourse may be present. A very frequent finding, and one which is a source of apprehension to patients, is the discharge of prostatic fluid at time of defecation. The hard stool presses against the congested and boggy prostate and forces out secretion which appears at the meatus.

PAINFUL SYMPTOMS

1. Backache is by far the most frequent painful symptom and is usually described as being "deep" in the lower part of the back. Prostatic backache is usually not severe; is sacral in type but may be lumbosacral. A typical history is that the patient is awakened in the morning by a discomfort in the lower part of the back which can be relieved either by voiding or changing position in bed. On arising he may or may not have stiffness on bending over.

2. Frequently and probably most annoying of all is the complaint of fullness in the rectum; itching and burning about or just within the anal orifice. There may be soreness and tickling in the neck of the bladder and perineum behind the scrotum.

3. Dull or occasionally very sharp pain in the urethral meatus. It is often difficult to convince the patient that the pain is referred.

4. Dull, aching pain in buttocks, thighs or calves of legs.

5. Infrequently sharp pain in the kidney region simulating renal colic.

6. Dull pain in the right lower quadrant simulating appendicitis.

7. Iridocyclitis, iritis and corneal ulceration are occasionally due to prostatic infection and prostatic massage should be performed with caution in the presence of such ocular lesions.

DIAGNOSIS

Ordinarily the diagnosis of chronic prostatitis presents no special problems and is dependent on the demonstration of pus in the uncontaminated prostatic fluid. It is important to emphasize uncontaminated prostatic fluid because if the secretion is obtained in the presence of an infected anterior urethra which has not been properly prepared or as more frequently happens an upper urinary tract infection, the pus derived at the meatus may easily be from these sources and not necessarily due to an infected prostate gland. Since diagnosis depends in the last analysis on the presence of abnormal prostatic fluid, a brief descrip-

tion—gross and microscopic—is timely. Infected prostatic fluid is not homogeneous but is granular and streaky. Microscopically varying amounts of lecithin and abnormal elements are found. The persistence or reappearance of lecithin under treatment is a favorable prognostic sign. Pus cells, in varying numbers either free or in clumps, are invariably present. Free pus best indicates fair drainage. It is not unusual to find a few red blood cells in fresh secretion but in the majority of cases it is impossible to demonstrate bacteria on stained slide.

In so many instances the mild symptoms of posterior urethritis associated with prostatic infection respond rapidly to routine treatment so that instrumental diagnostic methods such as cystourethroscopy should not be employed routinely. Such procedures are withheld for those cases presenting unusual diagnostic features, such as persistent discharge, persistent pyuria, hematuria or failure to improve under treatment. In summing up the main diagnostic points the following findings are important: (1) The presence of a change either in the size or contour of the prostate gland or in shape and consistency—that is, boggy in places—indurated in others; (2) tenderness on pressure; (3) pus present on microscopic examination of the secretion.

It must always be remembered that digital examination alone is not sufficient because one often finds a normal feeling prostate which on microscopic examination shows an abundance of pathologic processes.

A fact often emphasized but yet not sufficiently appreciated is that a single negative examination does not eliminate the presence of prostatic infection. This is borne out in practice frequently. It is essential to procure at least three negative examinations before declaring an individual prostate normal. Recent experimental work (O'Connor) has shown the definite advisability of the possibility of traumatizing the gland by too frequent manipulations and consequently obtaining false positive evidences of infection.

My feeling is that the proper execution of prostatic massage cannot be repeated too often so I will briefly review the technic as advocated by most urologists. It has been correctly stated by some that the prostatic massage is a crude procedure at best, consequently every effort should be made to become skilled in carrying out the process.

There are two very important axioms to be kept in mind: (1) Gentleness: I do not believe that too much stress can be laid on handling the prostatic gland with gentleness especially during the first few massages. I believe gentleness to be of utmost importance for many reasons; not alone because roughness will result in complications but also because better cooperation will be secured and the patient will continue treatments; (2) patient tolerance to massage must be considered and the thoroughness and frequency of treatment carefully regulated by the individual tolerance.

The most effective examination of the prostate gland may be made with the patient bending over a table or chair with knees slightly bent and toes turned in. The patient should present himself with bladder distended with urine or irrigating solution. The well lubricated and protected index finger is inserted in the rectum slowly and a careful examination is done consisting of sweeping the tip and flexor surface of the index finger over the surface of the gland and around its borders.

The lobes of a normal prostate are flat, flaccid and only moderately sensitive. There are no indurations or variations in consistency in the texture of the unaffected gland. The index finger is then introduced to the summit of the right vesicle and firm pressure and stroking is carried out along two or three parallel lines until a definite emptying is felt which requires six to eight strokes on either side. The left vesicle and left lobe of the prostate are then treated similarly, care being taken to avoid the midline. Finally the finger is drawn from above downward over the posterior urethra so as to express the secretion from the urethral floor ducts.

TREATMENT

In a consideration of treatment it is convenient to divide measures into: (1) General; (2) active.

Under general measures will be included all those designed to improve the patient's general health and should include the following: (1) Regular habits of eating and sleeping, especially sufficient sleep. (2) Careful attention to regular bowel elimination. This matter is so often neglected by busy professional and traveling men that time spent in explaining the importance of this matter in the plan of treatment is well worth while. (3) Regular but moderate amounts of exercise preferably in the open air. (4) Restriction of alcoholic drinks as much as possible; however in many cases it is inadvisable to restrict alcohol completely as the individual is urged to lead a fairly normal social existence. (5) Intercourse is not forbidden unless it is found to activate the disease. All acts which tend to produce chronic congestion of the prostate are prohibited such as over indulgence in sexual intercourse; the practice of "withdrawal"; the routine indulgence in virtuous petting parties.

Of all active measures indicated, prostatic stripping is recognized as the "sheet anchor" in conservative treatment. There is general agreement that this procedure should be carried out gently and in such a way as to express as much prostatic content into the urethra as possible. There is no general agreement however as to the frequency of treatments to obtain maximum results and more especially to guard against unfavorable reaction in the gland itself. Since the work of Ladd calling attention to the traumatizing effect of massage on the prostate of dogs, the interval between massage has been advocated as not oftener than four or five days. Also as Kidd and others have stated "prostatic massage is true vaccine treatment and should not be carried out more often than every four days." From this last viewpoint it is just as important not to overdo massage as it is to avoid overtaxing the immunity mechanism with large doses of vaccine. Other important questions arise; how long should massage be continued or should it be continuous or intermittent? My own plan is to treat these patients in courses rather than continuously. Routine massage is carried out every four or five days for eight or nine weeks, at which time usually the gland has decreased in size, the symptoms have subsided or lessened but ordinarily a certain amount of microscopic pus is still present in the secretion. A rest period from treatment, but not from hygienic measures is given, lasting from six to eight weeks, when treatment is resumed again. If the fluid still contains pus which unfortunately occurs frequently, the treatment course is continued as outlined above except that the duration of the rest periods is increased to three months or longer. In many instances of long standing prostatitis where we feel certain ultimate cure is unlikely our only attempt is to keep the pus at a minimum and to control any symptoms. I believe a fair percentage of patients if approached properly will not hesitate to return three times a year for prostatic treatment.

Dilatations: This form of therapy, while often a valuable adjunct in the handling of these cases, has not the prominence it once enjoyed. While the theory of dilatation with sounds and Kohlman dilators is reasonable, their too frequent use as a routine is not only inadvisable but definitely devitalizing and harmful. In support of their use, however, is the fact that large caliber strictures must be eliminated in all patients under treatment.

Irrigations and Instillations: Hot boric acid solutions or potassium permanganate 1-5,000 as bladder irrigations are very beneficial especially in patients with pyuria. They are not used routinely however in patients with a normal urine and are contraindicated when a man is not able to relax sufficiently, thereby making irrigation a difficult task, thereby inviting the use of high pressures or catheters. In cases where pyuria is absent and the patient complains of mild posterior urethral discomfort or sexual disturbances, I have secured better results with instillations of weak silver nitrate solution 1-1,000 to 1-500 into the posterior urethra following massage.

Heat: The use of heat in treatment of these cases is agreed upon and is certainly an efficacious means of relieving some symptoms. As a curative aid it may assist in the resolution of the infectious process in the tissues of the gland. The ordinary hot sitz bath is probably the most practical means of applying heat, as it is available to all patients daily.

Removal of Foci of Infection: Aside from prostatic massage this is probably the most important step in active treatment. Ordinarily we are not as keen in searching for existing foci as we should be. Abscessed teeth are probably the most important and dental opinion backed by suitable x-ray studies should be freely used. Infected tonsils or tags that are diseased and remaining after tonsillectomy, should be removed. The role sinuses and the gastrointestinal tract play as a focus of infection is less defined but they should be kept in mind in any case.

Drugs: Intravenous medication, especially mercurochrome 1 per cent, dilute hydrochloric acid and neoarsphenamine as in adjunct in treatment, has had many advocates but I believe it is being used with less frequency and enthusiasm as time passes. With the advent of sulfanilamide and its beneficial effects in other infections our hopes were extremely high, especially since it had been shown that the drug was excreted in the prostatic secretion. The results have been very disappointing; I believe, however, that it has a definite place in the treatment of certain cases. It has given rapid relief in many men with bladder symptoms, and pyuria has either cleared or been reduced markedly in amount. Unfortunately very few patients have been cured with this drug. The dosage has been small, not more than 30 grains daily and if relief is not prompt the drug is discontinued.

Vaccines and foreign proteins have all been disappointing to most physicians, and rarely are the results proportionate to the time and expense involved.

No discussion of this subject would be complete without mentioning the surgical approaches to the problem. Intraprostatic injections of chemicals has come to the front during the past few years and excellent results are being claimed by its supporters (Townsend and Grant). I have had no experience with this type of treatment but since the report of O'Connor and Ladd showing that results are due to the destructive effect on gland tissue, there has been considerable hesitancy to advise such a procedure.

Fairly recently Thompson, Cook and others have advised the use of the electrome in incising localized chronic abscesses found in the posterior urethra due to occlusion of protatic ducts. Since then Thompson and Orr have advocated the excision of segments of the posterior urethra with the resectoscope. Both ideas have as a basis better drainage of the ducts. These procedures are suitable only in a very small percentage of cases and require good judgment and more than average skill.

SUMMARY

A review of the more common symptoms of chronic prostatitis together with criteria for diagnosis is given. The technic of massage has been described and an analysis of methods of treatment given with suggestions as to their value.

I am well aware that nothing startling or new has been brought out in this paper on prostatitis, but it is hoped that this review will encourage a renewed interest in the handling of so common a condition.

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DISCUSSION

Dr. Monroe Wolf (New Orleans): Dr. Frederick has so completely covered the subject that there is little left for me to add, other than reiterate with emphasis facts he has brought out with a few personal experiences.

First, I want to impress upon you the fact that the prostate is very rarely involved without involvement of the seminal tract, the common cause of chronic recurrent epididymitis for which condition Belfield originated and advocated vasotomy with injections of antiseptic solutions chiefly the milder silver salts. This technic has been improved upon in recent years by such men as McCarthy, Ritter, Herbst and others who advocate ejaculatory duct catheterization, dilatation and retrograde medication through the pan-endoscope. This latter procedure necessitates greater experience and practice for perfection with the necessary instruments.

I am firmly of the opinion that chronic non-specific infection of the genital tract not associated with urinary tract infection or urethral stricture is secondary in origin from an infection either in the accessory sinuses or the alimentary tract which should cover everything from the lips to the anus, but rarely does this condition arise from a surface infection.

The symptoms of this condition have been so clearly elucidated that further mention would be superfluous.

I wish here to reiterate the advisability of urethral and bladder irrigation and the retention of a full bladder preliminary to digital rectal examination and massage of the prostate and vesicles for diagnosis and treatment. A large number of urologists advise attempting massage of the prostate and seminal vesicles separately for differential diagnostic purposes, a procedure I consider a practical impossibility in a majority of cases because of the difficulty in separate identification. Another point worthy of full consideration is the fact that a prostate and seminal vesicles normal to digital palpation and frequently symptomless will upon massage illicit pathologic excretions when the wet specimen is examined with the low and high powered lens of the microscope.

I am sure all present are familiar with the technic originated a number of years ago by the late Foster Johns, of centrifuging the excretions in a capillary pipet and staining a thin smear of the sediment with Gram's method. For several years I have modified this procedure by adding two or three loops of water to the sediment on the slide and mixing for a short period of time before fixing and staining. This is done to swell the protoplasm so that the capsule will not be contracted down about the nuclei of the pus cells. This technic was originated to facilitate the search for gonococci in suspected gonococcic infections, as well as to identify other micro-organisms.

At this point I would like to show a lantern slide illustrating the position I prefer to place my patient preparatory to palpation and massage. Being right handed, the patient is placed on a table on his right side with his right thigh and leg slightly flexed and the left thigh and leg greatly flexed so that the knee is against the chest, the body bending forward from the hips causing the buttocks to project well posteriorly. You will find this position much more satisfactory for the patient and for yourself, particularly should you have a psychic man-sized man collapse to the floor during a massage while in a standing bended position, besides eliminating the possibility of your patient going out and stating "that guy had both his hands on my shoulders when he massaged me" as you will be facing the patient.

When there is no evidence of urethral obstruction or stricture, my first attempt is to eliminate focal infection. This having been cared for I usually proceed with a series of irrigations and massages for a period of eight to 10 weeks as outlined by Dr. Frederick, never massaging a patient more frequently than every four days.

My experience with drugs and non-specific foreign proteins, either orally or parenterally, have not been very encouraging, although with your indulgence I will cite briefly a case that I consider of particular interest not entirely relevant to the title of Dr. Frederick's paper: A white male, aged 53, was referred to me after three months' treatment with sulfanilamide 20 grains daily, with little improvement of a positive gonococcic urethritis. I placed him on larger doses with urethral injections; the urethral discharge clearing up promptly, but in a period of four weeks after disappearance of discharge he developed an acute epididymitis with frequency, urgency, dysuria and very cloudy urine with no urethral discharge. The epididymitis subsided in four days with intravenous calcium medication but the very cloudy urine and urinary symptoms continued with gonococci in urine sediment for four weeks with the usual medication. At the end of this period, contrary to my better judgement and the reports of renal complications in the current literature, sulfapyridine gr. 7½ was given four times a day, with what I consider miraculous results, all symptoms subsiding and microscopically clear urine in 48 hours. The drug was given for a total of three days with a rest period of two weeks and repeated for three days. This patient has been clinically well for over three

months, although he has not returned for a check-up of his prostate.

I have been a staunch believer in the use of heat in infections of the prostate but have never considered surface heat as applied by sitz baths penetrated sufficiently to reach the prostate. I have used diathermy or the Eissner recurrent water flow prostate cooler as demonstrated in the following lantern slides. There are several small electric apparatuses with rheostat controls on the market, of particular service is the one designed by Bransford Lewis which can be heated to 120° F.

I could not develop any enthusiasm over the direct injection of mercurochrome into the prostate when I heard Owsley Grant read his preliminary report in 1931 at the A. U. A.

There are certain cases of non-draining abscess complications where surgery is definitely indicated.

Dr. Frederick (In conclusion): From a symptomatic viewpoint I do not believe there is any other procedure as effective as hot sitz baths.

Possibly with regard to the drug sulfanilamide, I have not given it just due. However, in thinking back I can remember only a few patients, three or four in whom almost miraculous cure occurred. One was that of a student at Tulane in 1921. He contracted a specific infection and from that time to 1937 he had been in the hands of several urologists. In spite of persistence in treatment at no time was his prostate free of pus and evidence of infection in the urine. He was placed on sulfanilamide 25 grains daily. After taking this drug for three days he felt so badly it was discontinued. Next time I checked his urine it was free of shreds and his prostate free of pus. Three or four times since then I have checked this individual and so far I have not been able to find any evidence of infection. Although the results derived in this case are always present before me, similar results with sulfanilamide have been rare in my experience.

TREATMENT OF HYPERPLASIA OF THE PROSTATE WITH DIETHYLSTILBESTROL AND DIETHYLSTILBESTROL DIPROPIONATE

A PRELIMINARY REPORT*

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Although castration and vasectomy were extensively employed in the treatment of prostatic hyperplasia during the latter part of the nineteenth century, and vasectomy remained popular till even more recently, both procedures have lost favor because of their lack of results. It is improbable that any interrelationship of the sexual hormones was suspected by the surgeons who advocated castration. It is more likely that the operation was supposed to exert some direct influence on the development and behavior of the prostate because of the observations made by John Hunter on the effect of castration on immature and adult experimental animals. It is now a well known fect that the testes elaborate androgenic substances and it has been suggested that prostatic hyperplasia is the result of a disturbed interrelationship between the pituitary and the testes. Lower and Johnston[1] have advanced a theory that hyperactivity of the pituitary gland leads to prostatic hyperplasia.

The synthetic male hormone, testosterone, has been widely used in the treatment of prostatic hyperplasia, with varying results. Salmon,[2] in experiments on female rats, noted the stimulating trophic effect of testosterone propionate on "the male vestiges, namely, the preputial glands, which are considered to be the homologues of the prostate." Heckel,[3] in an excellent paper, reported his failure to notice "any noteworthy reduction in the residual urine" or any improvement in clinical symptoms following this type of therapy. Histologic examinations on the glands of patients thus treated showed "no variation from the histologic sections of untreated patients." Our own experience has been that testosterone not only has no effect on prostatic hyperplasia, but at times seems actually to stimulate the gland to further growth. The experience of gynecologists has been happier. Geist and his co-workers[4] state that "tes-

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tosterone propionate (in doses of 300 to 1000 mg. per month) inhibits menstruation and arrests the endometrium at the early proliferative phase, preventing the development of progestational changes. Larger doses caused varying degrees of regression of the endometrium to the state of hypoplasia or atrophy."

Several authors have reported the presence of estrogenic substances in the male urine, and Zondek, cited by Kochakian,[5] suggested that in the stallion the excessive secretion of estrogen could be attributed to the conversion of androgens by some metabolic process. Kochakian, however, experimenting with the subcutaneous injection of various androgens, showed that estrogens excreted by males are not the result of the conversion of androgens. He said, in summary, "The presence of this latter material (estrogens) in the male organism is due in part, probably, to an independent production by the testes and the remainder to some estrogenic source."

Although Deming, Jenkins and Van Wagenen[6] observed hyperplasia of the fibromuscular stroma of the seminal vesicles and prostate following the use of the estrogenic hormone, theelin, on a male macaque monkey, it does not follow that other and more potent estrogenic substances might not have a different effect in the human. Chemically related estrogens, it is known, may have entirely different actions. As the use of androgenic substances does not seem to be the answer to the problem of the control of prostatic hyperplasia, it may be that estrogens have a part in the development of hyperplasia of the prostate in the human. Again, some estrogenic substance may possibly influence and bring about in the human prostate changes comparable to the action of the androgens on the endometrium.

DIETHYLSTILBESTROL IN THE LITERATURE

The estrogenic substance diethylstilbestrol, which was synthesized in 1937 by Dodds and his co-workers,[7] was reported by them to be of much greater potency (two and a half times) than estrogen. The usually conservative lancet[8,9] and British Medical Journal[10] both hailed it editorially because of its potent estrogenic properties and because "it is of great theoretical interest in that it brings the question of cell proliferation one step nearer to chemical control."

Noble,[11] in a preliminary report, stated that diethylstilbestrol had an inhibitory effect on the anterior pituitary gland similar to that of estrone, and was capable in every respect of replacing the action of estrone, even though the molecular structure of the synthesized substance bears little resemblance to that of the natural substance. He found it useful in inhibiting the anterior pituitary gland in the study of growth and of the endocrine organs. The inhibition of the gonadotropic effects of the anterior pituitary glad following the use of diethylstilbestrol was exhibited in male rats by atrophy of the testicles and a decrease in the size of the prostate and of the seminal vesicles.

Mellish and his associates[12] repeated and extended the earlier experiments on stilbestrol and added work on the dipropionate, because of reports of possible undesirable growth of the gonads of both sexes, as well as of the seminal vesicles and the prostate. They also found that the "dipropionate caused a greater suppression of the testes and prostate than did stilbestrol, but inhibited the seminal vesicles to a less degree." Parkes, Dodds and Noble[13] noted, among their other observations, that a rabbit which had received 1 mg. of diethylstilbestrol on the thirteenth, fourteenth and fifteenth days after mating, on the seventeenth day contained 10 embryos all being resorbed.

The successful use of diethylstilbestrol and diethylstilbestrol dipropionate in gynecologic practice in Europe, as well as the research studies on these substances in this country, raised in our minds the question as to whether hyperplasia of the prostate might possibly be due to a lack of balance between the androgenic and the estrogenic substances in the male. Some proof of this idea was found in the work of Wugmeister,[14] who expressed the view that hyperplasia of the prostate was due to a defi-

ciency of the estrone normally present in males and who treated 23 patients with large doses of this substance, with resulting marked improvement, as well as a decrease in the size of the prostate. Our own work, as will be shown, seems to support this theory.

Deming and Wolf's[15] concept of the anatomic origin of benign prostatic enlargements also furnishes additional support as to the possible effects of these estrogenic substances on this condition. Their study of autopsy specimens from subjects 45 years of age and older led them to state that "the tissues, both fibromuscular and glandular, are certainly not just enlargements of existing elements, but duplication by many times. The primary fibromuscular elements invite epithelial hyperplasia and development of glands similar in appearance to the glands in the normal prostate. The term 'hypertrophy of the prostate' should be applied only to physiologic increase in the size of the prostate gland without multiplication of its components. It is evident that in prostatic hypertrophy in man we are not dealing with an hypertrophied tissue but with an hyperplastic tissue which has a tendency to develop from many focal points, to grow without limit and ultimately to cause death to the individual." If these observations are correct, it would seem that diethylstilbestrol might at least inhibit further hyperplasia of the prostate and might possibly even cause its regression.

Fig. 1. Untreated hyperplasia of prostate. Note tall epithelium, numerous papillations, and relatively large acini.

Experiments on mice, cats, guinea pigs and rabbits by O. W. Barlow[16] in the Winthrop Chemical Laboratories showed " . . . a wide margin of safety between the toxic dose of diethylstilbestrol and the effective dose for laboratory animals," which " . . . permits some deduction as to the good immediate tolerance of therapeutic doses by human beings." It was found, for instance, that the intravenous lethal dose for cats, which was the lowest for any animals tested, is 30 mg. per kg., whereas the average clinical dose for a human subject weighing 60 kg. is only 1 mg. Karnaky,[17] in 25 clinical cases, used from 25 mg. (potency of 625,000 I. U.) to 55 mg. (potency of 1,375,000 I. U.) intramuscularly without ill effects. Winterton and MacGregor[18] reported that one of their patients took 21 mg. of diethylstilbestrol by mouth without ill effects and that occasional slight nausea was the only untoward symptom in 45 patients treated with this substance for various endocrine disturbances. Guldberg, cited by Loeser,[19] observed nausea in six of 15 subjects so treated.

These various observations seemed to indicate that diethylstilbestrol and diethylstilbestrol dipropionate could safely be used in the human subject. We therefore began to employ it in the treatment of prostatic hyperplasia, and to date have carried out the therapy in 14 cases, which we are reporting herewith.

The 14 patients will be reported in two groups, for obvious reasons. Group 1 consists of five patients seen in private practice, and group 2 of nine patients observed on the urologic service at Charity Hospital of Louisiana in New Orleans. The diagnosis of prostatic hyperplasia was based on the

history and the general physical and urologic examinations. Urologic examination included digital examination per rectum, urinalysis and estimation of residual urine in all cases, with cystoscopy in six cases. In seven cases the patients' condition did not warrant cystoscopy, and another patient, in whom it was indicated, refused to permit its performance. No case is included in which a contraction of the vesical neck was known to be present. Histologic examination of the prostate gland was possible in one case in the private group and in eight cases in the Charity Hospital group.

RESULTS IN PRIVATE PATIENTS

All five patients in the private group were white, and their ages were respectively 51, 59, 65, 70 and 71 years. All had been under observation and conservative therapy for varying periods of time, without relief of the prostatic hyperplasia.

Urinary symptoms were present in all cases. The size of the stream was small in three cases and very small in two, and the force ranged from fair to very poor. After-dribbling was observed in all instances, and one patient had had complete retention of urine on two occasions. The nocturnal index varied from 2 to 6 and the diurnal from 4 to 10; hesitation varied from 2+ to 4+. The residual urine varied from 45 c. c. to 180 c. c.

Sexually three of the patients were virile, one fairly virile, and in the fifth patient, who was the youngest of the group, virility was rated poor to fair. Libido was marked in one patient, fair in three, and occasional in one. Many active spermatozoa were found before treatment in three cases; in a fourth case, although many spermatozoa were seen, they were only fairly active.

The prostate, as measured per rectum, was approximately 2.4 x 3 cm. in one instance, approximately 3 x 3 cm. in three, and approximately 4 x 5 cm. in one. Cystoscopy and cysto-urethroscopy were performed in four cases. All bladders showed trabeculations, and in two there was evidence of chronic cystitis also. In all cases there was crowding of the prostatic urethra by the lateral lobes; in two cases there was intravesical enlargement, with a beginning median lobe in one instance and a large median lobe in another.

Diethylstilbestrol in sesame oil and diethylstilbestrol dipropionate in olive oil were given intramuscularly in the following dosages: 355,000 I. U. in 32 days; 180,000 I. U. in 48 days; 220,000 I. U. in 34 days; 510,000 I. U. in 64 days; and 425,000 I. U. in 61 days. No other treatment was employed, except that catheterization of the bladder was performed at intervals to determine the amount of residual urine.

At the conclusion of treatment examination per rectum showed that the hyperplasia of the prostate had disappeared in every instance, the glands having been restored to normal size in all but one patient, whose gland seemed somewhat atrophic. In one case the consistency was firmer than normal. Evidences of beginning regression were apparent in every case within four days. In three cases the prostate was smaller by 50 to 70 per cent within two days. In another case a regression of 90 per cent was noted within four days. The only evident local reaction during this period was that the gland was soft and boggy.

Cystoscopic examination at the end of treatment revealed no evidence of lateral lobe obstruction in four cases, although the middle lobe, in two of these, still showed evidence of hyperplasia. The prostatic urethra appeared normal in contour and length in all cases. In the fifth case cystoscopy revealed a small nodule, which was thought to be a fibromyoma, and a slight bulging, about an eighth of an inch, of the right lobe of the prostate.

In all five patients the force and size of the urinary stream were improved, within two days in one instance, and in five, 11, 21, and 35 days respectively in the other cases. One patient, on the fifty-fourth day after the institution of treatment, had temporary difficulty in emptying the bladder. Nocturia and diuria were completely relieved in four cases within two, 10, 13 and 21 days respectively, and these patients can

now hold urine from seven to 10 hours after retiring. The fifth patient, who is 70 years old and has a marked general arteriosclerosis, has had no noticeable relief in this regard, although he has no residual urine and no cystitis, and the gland, examined per rectum and by cystoscopy, has completely regressed.

Sexually, one patient, 65 years of age, complained within 10 days of lessened libido and poor erections. One, 59 years of age, believed the libido to be "no better and no worse," although orgasm was lessened and azoospermia was evident after the fifteenth day of treatment. One, 70 years of age, had no sex experience during the course of treatment. Two patients, 51 and 71 years of age respectively, noticed improvement in virility, and the former reported that his erections were firmer and more sustained.

In two cases, in which there had been a large amount of residual urine which contained pus, the urine cleared microscopically in both and in one case became microscopically free of pus. One patient who had had a mild prostatitis (10 to 20 cells per high power field) for several years, had an exacerbation of this condition on the twenty-first day of treatment, and the urine, which had been clear, became slightly cloudy and contained pus; the prostatic secretion at this time contained 300 to 500 cells per low power field.

Except for the exacerbation of the prostatitis just mentioned, and the possible effects on the sexual function, the only by-effects of treatment were nausea and cramps in two cases. Both patients had been given 5 mg. (125,000 I. U.) of diethylstilbestrol; the second dose was followed only by cramps, and the use of dipropionate in 1 mg. doses thereafter caused no discomfort at all. The other three patients, two of whom were treated by 1 mg. doses of dipropionate and the third by 5 mg. doses of diethylstilbestrol, made no complaints after treatment.

RESULTS IN CHARITY HOSPITAL CASES

Six of the nine patients in Group 2 were white and were aged 62, 66, 71, 78, 78 and 80 years respectively. The three colored patients were 60, 68 and 70 years respectively. At the time of admission to the hospital five of the six white patients and all three of the colored patients had complete retention of urine. All eight dribbled but could not void. Drainage of the bladder by catheter or suprapubically or by both routes was necessary in seven instances. Catheter drainage per urethram was instituted for one day, two days, 21 days, 48 days and 39 days, respectively, in five cases before treatment was begun. One patient had catheter drainage by urethra for 15 days and by lthe suprapubis route for nine days, and another drainage by urethra for 10 days and by the suprapubic route for three days before treatment was begun.

Under the circumstances, it was not possible to study diurnal or nocturnal frequency or residual urine in all these cases, and hospitalization precluded study of the effect of treatment on sex function and spermatogenesis.

After drainage, but before treatment with estrogenic substances was begun, the size of the prostate was estimated, respectively, as 4 x 4 cm.; 5.5 x 5.5 cm.; 5 x 7.5 cm.; 10 x 10 cm.; 10 x 7 cm.; 5.5 x 4 cm.; 5 x 6 cm.; and 7 x 7 cm. In one case, the right lobe measured 2 x 2 cm. and the left 4 x 4 cm. The residual urine measured on admission was 45 c. c., 150 c. c., 300 c. c., 350 c. c., 360 c. c., 700 c. c., 800 c. c., and 1,000 c. c., respectively.

In order to study possible histologic variations in this group of cases, both the dosage and the intervals between doses were varied, as follows:

Case 1. Diethylstilbestrol, 220,000 I. U. in 17 days.

Case 2. Diethylstilbestrol, 730,000 I. U., and diethylstilbestrol dipropionate, 80,000 I. U. in 19 days.

Case 3. Diethylstilbestrol dipropionate, 140,000 I. U. in 28 days.

Case 4. Diethylstilbestrol dipropionate, 260,000 I. U. in 32 days.

Case 5. Diethylstilbestrol dipropionate, 600,000 I. U. in 19 days.

Case 6. Diethylstilbestrol dipropionate, 300,000 I. U. in 15 days.

Case 7. Diethylstilbestrol, 375,000 I. U., and diethylstilbestrol dipropionate, 280,000 I. U. in 53 days.

Case 8. Diethylstilbestrol, 250,000 I. U., and diethylstilbestrol dipropionate, 220,000 I. U. in 27 days.

Case 9. Diethylstilbestrol, 600,000 I. U., and diethylstilbestrol dipropionate, 180,000 I. U. in 36 days.

It will be observed that in several of these cases the combined dosage was rather large: 810,000 I. U. in 19 days, 650,000 I. U. in 53 days, 470,000 I. U. in 27 days, and 780,000 I. U. in 36 days. The diethylstilbestrol was administered in sesame oil and the dipropionate in olive oil.

It was possible to examine only two patients in this group for residual urine and frequency of urination. One patient, who had a residual urine of 45 c. c. on admission to the hospital, had no evidence of retention after two doses of 5 mg. each of diethylstilbestrol on two successive days. His nocturnal index, which was originally 10 to 12, had been reduced to one by the sixth day. On the day on which treatment was begun a small median bar was resected, and 2.5 gm. of tissue were removed for examination from the smaller of the lateral lobes; the larger lobe was not biopsied.

The other patient in whom these observations were possible had residual urine of 1,000 c. c. on admission to the hospital. Within 12 days of treatment (20 mg., 500,000 I. U., of diethylstilbestrol) it had been reduced to 200 c. c., and by the nineteenth day, when it had been reduced to 60 c. c., he had a large stream of good force.

One patient complained of gastric disturbance after receiving 3 mg. (60,000 I. U.) of diethylstilbestrol dipropionate, but since he had previously been treated for peptic ulcer it is not clear that the estrogenic substance was responsible for his symptoms. The other patients experienced no untoward effects.

The prostate was removed by enucleation or resection or examined at autopsy in all patients in this group after they had received varying amounts of the estrogenic substances. In the meantime, all glands had shown evidence of reduction in size on examination. In three instances the glands, when examined by rectum, were of normal size at the time of operation. In another case the gland, which measured approximately 10 x 10 cm. on admission, was the size of a walnut after 33 days of treatment (360,000 I. U.) and weighed 17 gm. In one case, although the size of the prostate (4 x 4 cm. per rectum) had not been affected by 21 days of bladder drainage, a regression of 50 per cent was observed after two days of endocrine treatment, and when enucleation was done at the end of 17 days of treatment (with a dosage of 240,000 I. U.), the gland was the size of an English walnut and weighed 17 gm. In another case a 40 per cent reduction in size was observed after nine days of treatment, and at enucleation on the nineteenth day of treatment, after a dosage of 810,000 I. U., the weight of the gland, including the large middle lobe, was 65 gm. In three other cases regressions in size of 15, 20 and 33 per cent respectively were observed within two days.

Three patients died during the course of treatment, from causes not connected with therapy. Autopsy was performed in each case within four hours of death.

One patient, 70 years of age, died of intraventricular septal infarction, coronary thrombosis, multiple pulmonary infarcts, and myocardial infarction. Definite myocardial changes had been demonstrated by electrocardiography. In this instance a total of 650,000 I. U. had been administered in 51 days and the residual urine had been reduced from 1,000 c. c. to 60 c. c. The prostate, per rectum, was of approximately normal size. When it was removed at autopsy, it was unfortunately not weighed, but the lateral lobes were still somewhat enlarged and there was a fairly large middle lobe.

One patient, 66 years of age, died of pyelonephritis and pyoureter, conditions which are commonly found in association with prostatism. Electrocardiography had showed suggestive evidence of myocardial disease and roentgenologic examination had showed a moderately enlarged heart. The

prostate had regressed in size from approximately 6 x 5 cm. to 3 x 3 cm. after 470,000 I. U. had been given in 34 days.

One patient, 80 years of age, also died of bilateral pyelonephritis and pyoureter. He had had prostatism for 20 years, and when he entered the hospital he complained of severe nocturnal dyspnea and edema of the extremities. He had chills and fever at the time of admission, and the electrocardiogram showed definite evidence of myocardial disease. Catheter drainage per urethram was instituted. Four days before death, after the administration of 730,000 I. U. in 35 days, the prostate showed a regression of 50 per cent in size; at autopsy it was found to measure 3.75 x 5 cm., instead of the original 7 x 7 cm.

The histologic changes in the glands which could be examined will be reported in detail elsewhere. No attempt will be made in this communication either to discuss the exact chronologic order of their appearance or to correlate the dosage and duration of treatment with the changes observed. Certain general statements, however, may be made at this time. The greatest changes were observed in the glands of those patients who had received the largest total dosage. The positive findings (as reported by Drs. J. R. Schenken and E. L. Burns) included reduction in the number of papillary infoldings, reduction in the height of epithelium, vacuolization of the cytoplasm of the epithelium, decrease in the size of the acini, and stratification of the epithelium with and without vacuolization of cells. The stratification of the epithelium was most marked in the patients whose tissues had been removed from 16 to 62 days after treatment was begun.

Fig. 2. Hyperplasia of prostate, treated for 16 days, receiving 220,000 I. U. of diethylstilbestrol; enucleated on twentieth day following initiation of treatment. Note lowering of epithelium, relatively small acini, stratification of epithelium, and diminution in size and number of papillations.

Fig. 3. High power view of a single acinus of prostate in which patient had received 450,000 I. U. of diethylstilbestrol in 33 days; enucleated on thirty-sixth day following treatment. Note stratification of epithelium completely filling lumen and hydropic degeneration of cytoplasm of cells.

The following case reports are presented as typical:

CASE NO. 1

B. J. H., a white male private patient, 59 years of age, had had the symptoms and physical findings of hyperplasia of the prostate gland for three

years. During this time he had been under observation and treatment for prostatitis at various intervals. The diurnal urinary index was 5 and the nocturnal 2-3. The stream was small, slow in starting, and lacking in force. Rectal examination showed both lateral lobes of the prostate enlarged, and the size of the gland approximately 2.5 x 2.5 cm. It was firm and not tender.

The urine was clear and urinalysis showed no abnormalities. The amount of residual urine was 60 c. c. The excretion of phenolsulphonphthalein was 75 per cent in two hours. The Wassermann reaction was negative. Examination of the ejaculate showed many active spermatozoa. Examination of the prostatic secretion showed no bacteria and 10-12 pus cells per high power field. Cystoscopic and cysto-urethroscopic examination revealed no abnormalities of the bladder other than trabeculations. The prostatic urethra was lengthened, both lateral lobes were hyperplastic and bulged into the urethra, where they came together, and a large middle lobe was present.

Treatment consisted of intramuscular injection of 1 mg. of diethylstilbestrol dipropionate on alternate days for four days, and then at intervals of five days. A total dosage of 180,000 I. U. was given over a 48 day period. Two days after the first injection the prostate was reduced in size by 50 per cent and the consistency was very soft instead of firm. Within 12 days the gland was of normal size but still somewhat boggy. Within two days after the beginning of treatment the stream was improved in force and nocturia had disappeared. Ultimately the stream became strong and full. Residual urine was no longer present nine days after treatment was begun.

One month after treatment was begun the patient complained of some diurnal frequency of urination and a sense of bladder fullness. The prostate was boggy on rectal examination but was not enlarged. Prostatic secretion revealed no bacteria but from 300 to 500 pus cells per low power field. The urine was cloudy. The symptoms lasted four days, then disappeared, and the urine became clear after two massages. Cystoscopic examination on the thirty-sixth day of treatment showed no evidence of bulging of the lateral lobes into the prostatic urethra. The right half of the middle lobe was still fairly large, but there was complete regression of the left half. There was slight edema of the veru montanum.

CASE NO. 2

A. W., a white male private patient, 51 years of age, had had gonorrhea 30 years ago. He had had typhoid fever, influenza and pneumonia, had been operated on for a right inguinal hernia 26 years ago, and had had all his teeth extracted nine years ago. When he was first seen he complained of impotence for six months, lessened libido, and burning on urination for 23 days. He had frequency of urination, but no urgency or tenesmus. The nocturnal urinary index was 2-3 and the diurnal 8. The stream was slow in starting, was small and lacking in force, and could be projected only a few inches. The prostate, examined by rectum, was not tender, but was enlarged to approximately 3 x 3 cm.

The Wassermann reaction was negative. Urinalysis showed clear, normal urine. The residual urine was 45 c. c. The excretion of phenolsulphonphthalein in two hours was 70 per cent. The seminal secretion showed many active spermatozoa. Cystoscopy and cysto-urethroscopy showed both lateral lobes crowding the prostatic urethra, and very slight intravesical projection. The bladder was slightly trabeculated.

Treatment consisted of one 5 mg. dose of diethylstilbestrol, followed by 1 mg. doses of diethylstilbestrol dipropionate on alternate days for eight doses, after which 1 mg. was given every fourth day for three doses, and, finally, at weekly intervals for four doses. The total dosage was 425,000 I. U. and treatment covered 61 days.

Immediately following the first dose the patient's symptoms were improved, he had no nocturia, and the stream was stronger. Following the second treatment he complained of slight burning in the urethra and on the shaft of the penis. The prostate, per rectum, was smaller and softer. On the eighth day of treatment the gland was of normal size and the right lobe was slightly firmer. There was continued improvement in the size and force of the stream, and by the eleventh day projection to three feet was possible. At this time the left lobe of the prostate had become normal in size and consistency, and the right lobe was normal except for a firm ridge about 0.5 cm. thick on the outer margin. Some continuing diurnal frequency of urine, and occasional nocturia, were considered due to an excessive use of coffee. By the twentieth day of treatment nocturia had disappeared and the patient could hold urine for eight hours. He had had sexual intercourse and reported that the erections were firmer and more sustained. Rectal examination showed the ridge on the right lobe of the prostate to have shrunk except for a small nodule on the outer margin near the apex. On the twenty-fourth day the prostate per rectum was of normal size and consistency. The seminal secretion (condom specimen) showed occasional pus cells per low power field, and one or two spermatozoa to every fourth high power field. They stained poorly with methylene blue and the tails were either absent or swollen; the heads deviated from normal.

A month after the beginning of treatment cysto-urethroscopy showed no evidence of prostatic enlargement, the patient slept 10 hours without emptying his bladder, erections were very good and persisted even after ejaculation, and examination of the prostate per rectum showed it

to be normal in size and slightly firmer than normal in consistency.

CASE NO. 3

C. M., a white male, 71 years of age, was admitted to Charity Hospital of Louisiana January 3, 1940, complaining of bladder trouble for one year, dribbling for three weeks, and severe dysuria. The diurnal urinary index was 6-7 and the nocturnal index 3-5. There had been complete retention of urine for three days before admission, and prior to that the stream had been of no force and little volume. Physical examination showed an emaciated subject. Rectal examination showed the prostate gland to be approximately 5.5 x 5.5 cm.

The residual urine was 150 c.c. Urinalysis revealed occasional pus cells per high power field. January 16 the phenolsulphonphthalein excretion was 40 per cent in one hour; February 8 it was 30 per cent in one hour and March 12 it was 45 per cent in two hours. The Wassermann reaction was negative. The non-protein nitrogen of the blood was 40.8 mg. per cent.

Intra-urethral catheter drainage was instituted from January 3 through January 18. The patient did badly and had chills and temperature elevations throughout this period. Suprapubic cystostomy was done January 27, with improvement in the general condition, though not in the size or consistency of the prostate gland.

January 27 the patient was given 5 mg. of diethylstilbestrol (125,000 I. U.), and the same dosage was repeated on alternate days for six doses. Then 1 mg. of diethylstilbestrol dipropionate (20,000 I. U.) was given on alternate days for four doses. The total dosage was 810,000 I. U. and the duration of treatment 19 days. Two days after treatment had been begun the gland was boggy in consistency but was 20 per cent smaller. Three days later it was firm in consistency and 40 per cent smaller than when treatment had been begun.

February 17 the gland was enucleated by the suprapubic route. It weighed 65 gm., including a large median lobe. Histologic examination showed the usual hyperplasia in some areas. In other areas, however, small, undilated acini were lined by one or two layers of low epithelium; papillary projections into the acinar lumen were either small or absent. Other acini were widely dilated and formed large cystic spaces which were lined by extremely low, flat epithelium. In certain areas the smaller acini as well as occasional larger acini were lined by stratified epithelium; some of the cells showed hydropic degeneration. A few acini were filled with masses of desquamated hydropic epithelial cells, sometimes mixed with polymorphonuclear leukocytes. In isolated areas the fibromuscular stroma was edematous and the tissue spaces contained a few lymphocytes, macrophages and polymorphonuclear leukocytes. With these exceptions inflammatory processes were not prominent.

CASE NO. 4

J. A., a colored male, 60 years of age, was admitted to Charity Hospital January 28, 1940. His bladder trouble, which had existed for three years, had begun as a slowing of the stream, with decrease in size and force. The diurnal urinary index was 10-12 and the nocturnal 12-15. For two days before admission he had had complete retention of urine. The blood pressure was 205/110. Rectal examination showed the prostate to be rubbery, not tender, and about 10 x 10 cm.

The residual urine was 800 c.c. The urine showed a trace of albumin and 20 red blood cells and 5-8 white blood cells per high power field. The excretion of phenolsulphonphthalein January 30 was 15 per cent the first hour and 60 per cent the second (75 per cent for two hours); April 3 it was 40 per cent for the first hour and 15 per cent for the second hour (55 per cent for two hours). The non-protein nitrogen of the blood was 42 mg. per cent January 29, 36 mg. per cent January 31, 42 mg. per cent February 15, and 23 mg. per cent April 3. The Wassermann reaction was positive January 29 and March 16.

Catheter drainage was instituted January 28 and continued through March 7. During the course of treatment the patient developed epididymitis with chills and fever. When the catheter was removed he could not void. Suprapubic cystostomy was performed March 7, at which time the gland was unchanged in size and consistency.

Treatment with estrogens was begun March 8. Diethylstilbestrol dipropionate was given in 2 mg. doses (40,000 I. U.) every third day for six doses, then in 1 mg. doses every third day for six doses, making a total of 360,000 I. U. in 34 days.

Suprapubic prostatic enucleation was performed April 13. The gland, which had regressed to the size of a walnut, weighed 17 gm. Histologic examination showed the usual hyperplasia in a few areas. In most areas, however, the epithelial elements consisted of small, undilated acini lined by one or two layers of low epithelium or by stratified epithelium which encroached upon or completely filled the lumen. Many cells in the stratified layers showed marked hydropic degeneration. In one area the acini were small and many of them formed solid cell nests, which were distributed irregularly in the fibromuscular stroma. Some acini contained a few desquamated hydropic epithelial cells, and others were filled with masses of polymorphonuclear leukocytes. In some areas, particularly beneath the bladder mucosa, dense infiltrations of lymphocytes and polymorphonuclear leukocytes were seen.

COMMENT

We are making no attempt at this time to explain the action of these exogenous

estrogenic substances on hyperplasia of the prostate gland. It is left to those more competent to judge to determine whether they act through the hypophysis, directly on the elaboration of androgenic substance by the gonads, by changing the androgen-estrogen balance in relation to prostatic hyperplasia, or directly on cell proliferation and cell changes. Of their effect, however, there seems no doubt, and the rapid changes in the size and consistency of the hyperplastic prostate gland following the administration of these potent estrogenic substances gives rise to speculation as to the possibility of a direct action, at least in part, on cell proliferation in this benign neoplastic condition.

SUMMARY AND CONCLUSIONS

1. Fourteen patients with hyperplasia of the prostate were treated with diethylstilbestrol and diethylstilbestrol dipropionate. Eleven patients were white and between the ages of 51 and 80 years. Three were colored and between the ages of 60 and 78 years. Five were ambulant and nine were observed in the hospital.

2. A decrease in the size of the hyperplastic prostate was observed per rectum in all patients, by cystoscopic examination in four, and at operation or autopsy in nine.

3. In seven cases in which the observations were possible the effect on the symptoms common to hyperplasia and on the residual urine was definitely beneficial. In three cases effects on spermatogenesis were noted.

4. Three patients died of other diseases during the period of observation. Postmortem examination revealed findings not unusual for subjects of their age and condition and absolved the estrogenic substances from any responsibility for their deaths.

5. Histologic study of excised specimens showed deviations from the usual findings in hyperplasia of the prostate, chiefly a reduction in the number of papillary infoldings, reduction in the height of the epithelium, vacuolization of the cytoplasm of the epithelium, decrease in the size of the acini, and stratification of the epithelium, with and without vacuolization of cells.

6. Although the number of observations is still small and treatment has been conducted for comparatively short periods, the following conclusions seem justified:

a. The administration of estrogenic substances produces definite changes in the glandular elements of the hyperplastic prostate.

b. Moderately enlarged glands regress to normal size and even atrophy, with complete relief of symptoms. Very large glands decrease in size, and, in an appreciable number of cases, return to normal size and weight.

c. Hyperplasia of the prostate gland can probably be controlled by adequate therapeutic and maintenance doses of potent estrogenic substances such as diethylstilbestrol and diethylstilbestrol dipropionate.

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PULMONARY TUBERCULOSIS

A SYMPOSIUM*

PATHOLOGY AND PATHOGENESIS

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NEW ORLEANS

The data concerning the pathology and pathogenesis of pulmonary tuberculosis which are summarized in this paper are collected only from the author's routine experiences in the postmortem room and from the experiences of others as they are recorded in the literature. They are not the result of a planned study of either postmortem or experimental tuberculous infection.

ETIOLOGY

There is ample confirmation of the role which the tubercle bacillus plays in the causation of pulmonary tuberculosis, although studies are still being conducted with regard to the types of the organism which are concerned. Such studies suggest that in this country the great majority of cases are due to infection with the human type of tubercle bacillus. Infections of the lungs, as well as of other tissues of the body, with the bovine type of tubercle bacilli are becoming increasingly rare, the reduction in incidence being directly related to the control of bovine tuberculosis. Infection of human beings with other types of tubercle bacilli probably never occurs, although cases suspected of being infected with the avian type of organism have been reported.

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PATHOLOGIC CHANGES

Since many of the conclusions, as well as many of the controversies, in regard to the pathogenesis of pulmonary tuberculosis are based on postmortem observations, it might be well, before turning to the more complicated problem of pathogenesis, to consider the basic types of pulmonary lesions encountered at the postmortem table. Two general types are found. The first, commonly called primary tuberculosis, or childhood type tuberculosis, usually occurs in children and presumably represents the first contact of the human lung with tubercle bacilli. The second, commonly called the reinfection type or the adult type, presumably represents the second contact.

Many primary infections probably lead to minimal lesions which, upon healing, leave a small scar that is either lost in the lung tissue or is overlooked. More severe infections, however, produce a rounded or pyramidal-shaped caseous mass which may be found in any part of the lung but which is usually located close to the pleural surface in the middle part of the upper lobes or in the upper portion of the lower lobes. The lymph passages draining such foci characteristically show caseous foci along their paths, and the lymph nodes at the hilus of the lung are greatly enlarged and softened, and are filled with caseous material.

The course of these primary lesions is variable. Often they regress by becoming encapsulated and calcified, and remnants of them may be found years later in adult lungs examined roentgenologically or in the postmortem room. It is not unusual, however, for them to progress. In some instances the invasion of a pulmonary vein, with the discharge of large amounts of caseous material into the lumen, may lead to generalized miliary tuberculosis. In other instances the wall of a bronchus is eroded, frequently from an adjacent caseous lymph node at the hilus of the lung, so that tuberculous material is poured into the bronchial lumen, through which the contained bacilli are in turn distributed to the corresponding alveoli of the lung. Lobular areas of caseous pneumonia are thus produced, the softening

of which, with discharge of the softened material into the lumina of the bronchi, may lead to cavitation.

Such lesions are believed by almost all authorities to result from primary infection with tubercle bacilli during childhood. There is some dispute, however, as to the character of the lesions which result from primary infection after adult life is reached. Some authors believe that in both anatomy and clinical course such an infection is similar to that which occurs in children. Others believe that it may differ in either respect or in both. Although the question remains to be clarified, it seems certain that lesions are sometimes encountered in the lungs of adults which are indistinguishable from those occurring in children and which are the presumable result of a first encounter with tubercle bacilli.

The lesions in the reinfection type of tuberculosis differ somewhat from the primary lesions which have just been described. The most common lesion seen in adult life is a healed one which takes the form of a flattened, puckered scar usually located in the apex of the lung, just beneath the pleural surface; it is often associated with fibrous union of the two pleural surfaces. In most instances it extends only a short distance into the lung, is deeply colored with black pigment, and may show round, hard, gray tubercles in its substance. Small fibrous or calcified foci in the lymph nodes at the hilus of the lung are usually associated with these alterations in the lung tissue. Although the idea is supported by no direct observation on pathologic material, it seems possible that such an apical lesion, during the active stage of its development, may be responsible for some of the tuberculous pleural effusions frequently seen in young adults in whom no parenchymatous lesion of tuberculosis is demonstrable by roentgenologic studies.

The earliest active lesions of the reinfection type are not usually located at the true summit of the lung but are found in the infraclavicular region 1 cm. or more below the apex. The reason for the difference in position of healed and active lesions is obscure. Some investigators maintain that the active lesions are the result of a spread of infection from initial foci in the apex.

Whatever the mechanism of localization, the first noticeable active lesion of the reinfection type takes the form of a small cavity, which usually communicates with a bronchus. From its starting point in the upper lobe the infection may then follow several paths. Sometimes the cavity becomes surrounded with fibrous tissue and the advance of the infection is halted. In such cases the cavities may become obliterated, or, less often, the interior may become lined by bronchial epithelium.

Other lesions continue to enlarge, the rate of advance depending upon various factors which will be discussed later. If the advance is slow, the zone about the infected area becomes extensively scarred and deeply pigmented; tubercles and areas of caseation are distributed rather sparsely through the scarred tissue. Excavations occur by caseation and softening of tissue in the margin of the cavity, and in the course of months or years cavities of this kind may enlarge until they sometimes occupy entire lobes of the lungs. Encapsulated tubercles surrounded by zones of scarred lung tissue are often found in the lower lobes of both lungs. The pleural surfaces are frequently bound closely together by dense fibrous adhesions which extend over the upper lobes in particular but which sometimes encase the entire lung. Although the lung tissue may be widely and extensively destroyed, the degree of involvement of the lymph nodes at the hilus is relatively slight. Scarring and a few small caseous tubercles are commonly found in these nodes, but as a rule there is no massive enlargement such as is seen in the primary type of tuberculosis.

When little resistance is offered to the growth of the tubercle bacilli, the cavity enlarges rapidly and the wall becomes lined by soft, yellowish gray, caseous material in which tubercle bacilli are numerous. Only slight attempts are made to wall off the infected areas by connective tissue. Soft caseous masses, which originate from the walls

of cavities and which contain many tubercle bacilli, are discharged into the bronchial tree, through which they are disseminated to other parts of the lung, especially to the lower lobes. Wherever these bacilli lodge, areas of caseous bronchopneumonia tend to develop. Such areas may be small, or they may be large and confluent. Occasionally the dissemination occurs through a large bronchus and an entire lobe becomes consolidated, with the production of a caseous lobar pneumonia. Rapid softening in the affected pneumonic areas, with a discharge of the softened material through bronchi to the outside, may lead to rapid and extensive destruction of lung tissue. Even in rapidly progressing cases, however, involvement of the lymph nodes is not striking and they seldom show the extensive enlargement and caseation seen in the primary type of infection.

The pathologic lesions of the primary and the reinfection types of pulmonary tuberculosis thus differ from each other in several respects. In the primary type the disease tends to produce its first lesions in the middle or lower portions of the lung. In the reinfection type the lesion tends to originate in the upper portions. In the primary type the tubercule bacilli spread in large numbers to the lymph nodes, at the hilus of the lung, where they cause massive enlargement and caseous necrosis. In the reinfection type they do not readily spread to the lymph nodes, which therefore are not greatly enlarged and do not present marked caseous necrosis. Around the explanation of these differences are built many of the present concepts and controversies concerning the pathogenesis of pulmonary tuberculosis.

PORTAL OF ENTRY

Although lymphatic and hematogenous routes have been suggested as portals of entry for the tubercle bacilli, considerable evidence points to the fact that in primary infection, at least, the organisms are drawn into the lungs through the air passages. In the reinfection type differences of opinion are greater as to how they arrive at the sites they infect.

Reinfection tuberculosis occurs in persons who have previously been infected with tubercle bacilli and who therefore may be harboring the organisms in their bodies. For this reason it would not be illogical to believe that the reinfection type of tuberculosis could originate from continued or renewed growth of the organisms already present within the body. Such a concept would be easy to accept were it not for the fact that tuberculosis of the reinfection type selects a new and distant location, a site near the apex of the lung, for its point of origin. Some investigators believe that primary foci, especially those lesions located in the lymph nodes, become active under the various stresses of adult life and that, as a result, endogenous blood or lymphatic spread occurs to the new foci in the upper lobes of the lung. Other workers take the position that the second infection is not related to the earlier infection but results, instead, from inhalation of bacilli from exogenous sources. A compromise view is that bacilli are inhaled into the lungs from outside sources, and, although incapable of producing infection themselves, are able to cause reactivation of old primary lesions. Bacilli are thus released from the old foci and are carried by the blood or lymph streams to the site of reinfection in the apex of the lung. All these views are supported by reasonably sound evidence at the present time, and it seems possible that under varying circumstances reinfection may be accomplished by any of the methods described.

LOCALIZATION OF THE LESION

The site of the lesions in the primary type of tuberculosis is not difficult to understand. Localization in the middle and lower portions of the lung is quite compatible with the behavior of other small particles inhaled into the lungs, as, for example, silica dust. On the other hand, no adequate explanation has ever been advanced for the localization of reinfection tuberculosis in the apical region of the lung. Differences in the distribution of bronchi and blood supply, and various theories concerning the mobility of the upper portion of the lung, with result-

ing hypoventilation or hyperventilation, have been suggested as explanations, but none of them is fully acceptable.

FACTORS INFLUENCING THE COURSE OF INFECTION

Since almost every person at some time or other in his life is infected with tubercle bacilli, a study of the factors which lead to progression or healing of the resulting pulmonary lesions is of great importance. Immunity and allergy, dosage, and virulence are some of the factors which have been studied in this regard.

Immunity and Allergy. Several types of immunity appear to be at work in pulmonary tuberculosis. Theories of racial immunity have arisen from the fact that different races apparently possess a different resistance to the disease. Tuberculosis in the colored races, which is associated with a much higher mortality than in the white races, is often used to illustrate lack of racial immunity. Authorities who maintain that the difference in the mortality rates is due to an hereditary susceptibility of negroes to tuberculosis cite the numerous instances in which the disease becomes disseminated through blood or lymph channels, the great tendency for the development of caseous bronchopneumonia, and the relative lack of fibrous tissue proliferation about the pulmonary lesions in this race. On the other hand, these apparent differences in racial susceptibility have also been attributed to differences in modes of living, it being generally conceded that the crowded, unhygienic conditions under which the negro race often lives permit heavier as well as more frequent infections with tubercle bacilli. The investigators who adduce these facts maintain that when environmental conditions are comparable, there is little difference in the susceptibility of the white and colored races. Sound arguments have been advanced on both sides of the question, and it seems likely that the truth lies somewhere in the middle, and that actually both environmental and hereditary factors explain the different manifestations of tuberculosis in the negro and white races.

More and more evidence is accumulating to suggest that individuals living in the same environment and with essentially the same hereditary background show varying degrees of resistance to tuberculous infection. The mechanism of resistance is poorly understood, and the differences are often attributed to differences in the broad group of characteristics classified as constitutional factors. Examples of such individual resistance are seen in both experimental animals and human subjects. Experiments with pure strains of animals have demonstrated individual variations in susceptibility to tuberculous infection, even though the dose and virulence of the organisms, as well as the environmental conditions, were rigidly controlled. Tuberculosis often develops in less than half the members of a large family, although all the individuals in it are exposed heavily, and presumably more or less uniformly, by a diseased parent. Such factors undoubfedly play a role in the pathogenesis of tuberculosis in human beings, but their evaluation is difficult because of the many accessory factors, such as nutritional and mental states, age, fatigue, and other environmental conditions which are also influential in modifying susceptibility.

The acquired immunity which develops in response to tuberculous infection can be well demonstrated in appropriate experimental animals (for example, the guinea pig), which have recovered following a small immunizing dose of tubercle bacilli. Such animals, instead of developing the generalized, fatal tuberculosis which usually follows the first dose, present the following reactions to a second injection: (1) An accelerated and intense inflammatory reaction at the site of this injection, the inflammatory reaction often being so severe as to produce ulceration; (2) localization of the bacilli to the site at which they were injected, with little or no spread to the regional lymph nodes; (3) a tendency toward less rapid progression of the lesion; (4) complete healing of the lesion in many cases.

Similar factors are thought to be at work in the reinfection type of human tuberculosis and to account for: (1 The tendency

of the lesion to remain localized in the lung tissue, with only a minimal spread to neighboring lymph nodes; (2) progression of the lesions by caseation, softening and excavation, and by spread of bacilli through the bronchial tree; (3) the healing of lesions by resolution or fibrosis.

Under these circumstances, however, the presence of immunity is associated with the development, in most cases, of hypersensitivity to tuberculous protein, as evidenced by accelerated and intense inflammatory reactions to reinfection or reinoculation. Such reactions are not seen when the bacilli are first introduced into human or animal tissues. The relation of this allergic state to immunity has been the subject of considerable controversy. Some workers maintain that the hypersensitive state is the mechanism by which the body resists the growth of tubercle bacilli. On the other hand, it has been shown that desensitization can be achieved in tuberculous animals without a concomitant loss of resistance. Another group of investigators, who maintain that the allergic state is responsible for the destructive lesions in pulmonary tuberculosis, assert that allergy is not only unrelated to immunity but that actually it has a harmful effect in the course of tuberculous infection. No final conclusions can be drawn at this time, but it would seem that allergy is sometimes distinctly harmful during the course of tuberculous infection, while at other times it is not the decisive factor. There seems no doubt, however, that under many circumstances healing can take place in the presence of a high degree of sensitivity.

Dosage. The entirely logical conclusion that massive doses of tubercle bacilli are capable of producing more severe disease than smaller doses is subscribed to by almost all students of tuberculosis. These conclusions are amply borne out by experimental evidence, which makes it clear that the number of bacilli administered plays an important role in the severity of the resulting disease. Moreover, when bacilli arrive in the tissue in clumps rather than as single organisms, a more severe and necrotizing reaction is produced. That these principles which operate in experimental animals are also operative in human tuberculosis is accepted by most authorities.

Virulence. The factor of the virulence of tubercle bacilli is primarily concerned with the ability of the micro-organism to adapt itself to and grow in the tissues of the host. This ability varies with different types of tubercle bacilli; some can grow in the tissues of some animals but not in the tissues of others. The human type of tubercle bacillus, for instance, is able to infect human beings and guinea pigs, but not rabbits, whereas the bovine type of organism can infect all three species. Virulence may also vary from strain to strain in organisms of the same type. Strain H37, for instance, is capable of producing fatal disease in guinea pigs, whereas strain R1 in comparable doses cannot in most instances produce progressive lesions. These observations indicate that the organisms which reach the human lung vary considerably in their ability to produce serious infection and that, as in any other infectious disease, the severity of the disease is dependent, at least in some degree, upon the virulence of the bacillus concerned.

SUMMARY

From this brief summary it may be seen that the course of human pulmonary infection with tubercle bacilli is a complex, mobile and ever changing process. In many cases trivial scars are produced and the course of the infection is not marked by either physical or symptomatic events. In other cases the infection progresses and the outcome depends upon a constantly changing interplay of such factors as natural or acquired immunity, the allergic state, and the dosage and virulence of the organisms. The outcome may even depend upon such elements of chance as whether the initial focus involves the wall of a vein, a bronchus or an artery, or the surface of a pleural cavity. The study and further solution of fundamental problems such as these will contribute considerably to our better understanding of this very formidable disease.

EARLY DIAGNOSIS FROM THE STANDPOINT OF THE PEDIATRICIAN

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From the standpoint of the pediatrician the early diagnosis of tuberculosis is made in the first infection phase of the disease when symptoms are vague and physical signs appear meager or entirely absent. A history of exposure to an open case of tuberculosis in the immediate family is sometimes the opening wedge for investigation of possible infection in the child, though far too often the reverse of this situation is true and initial discovery of the disease in the infant or child leads to the disclosure of the source of the child's infection in a parent or other close relative or a domestic. The rarity of congenital tuberculosis and the rapidity of its acute course during the first few weeks of life preclude considering the infection in the light of any but its acquired forms, and search for the exposure must be immediately instituted as a therapeutic measure. If any suspicion of tuberculosis exists in prospective parents, tuberculin-testing should be performed immediately with x-raying of all positive reactors to determine the stage of infection. If a definite history of previous adult tuberculosis in either one of a contracting couple is obtained, conception should not be sanctioned until full investigation and proof of latency of the disease in the infected member has been established.

The tuberculin test is the most valuable diagnostic measure in the detection of first infection tuberculosis, since only one-fourth of all children with first infection tuberculosis manifest either clinical or roentgenologic evidence of the disease, and the diagnosis is established by the positive appearance of the tuberculin test.

TUBERCULIN TESTING

Of the many forms of tuberculin testing, the Mantoux intradermal test and the von Pirquet epidermal test are the two most generally used, the Mantoux test having almost completely superseded the von Pirquet. The percutaneous test of Moro, where a concentrated tuberculin ointment is rubbed into the skin, has been modified by Wolff,[1] who merely applies a drop of tuberculin ointment to the skin and covers directly with a strip of adhesive, a reading being made at the end of 48 hours. In 1937, Vollmer and Goldberger[2] reported use of a tuberculin patch test, consisting of a strip of adhesive tape on which a square of filter paper saturated with undiluted tuberculin has been placed. This is applied directly to the skin and a reading is made at the end of 72 hours. This test has several commendable points, chief among which are economy of time and material, and absence of pain on the part of the patient, so that no psychic obstacle to further testing is built up. However, the extreme simplicity of the test militates against its usefulness, since the great ease of application will invite nurses and possibly schoolteachers to attempt the test and many first infection cases will be missed through questionable technic and interpretation. The intradermal Mantoux test in a dosage of 0.1 c.c. of the usual 1 to 1,000 dilution is still the standard gauge of effectiveness of all other tests, and thereby admittedly the most dependable. Care must be exercised that introduction of the testing solution is made entirely intradermally and that the solution used is of proper freshness and correct dilution. A positive test is recognized by its palpable central induration and edema surrounded by a peripheral zone of erythema. Presence of mere redness with no central edema in the reaction does not constitute a positive, since tuberculo-protein sensitivity is evidenced by induration and edema.

A period of three to seven weeks after tissue implantation of infective material is required before tuberculoprotein sensitivity develops and the Mantoux test becomes positive. This period of invasion is known as the preallergic phase of the infection and is entirely symptom-free. The test should not be attempted in the presence

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of any hyperpyrexic state, since a false negative may result.

The Mantoux test is a fixed allergic reaction and once positive, remains positive as long as living tubercle bacilli are present in any focus of infection within the body. The test does not register the virulence of the invading organisms or the extent of tissue involvement. Once the test is found positive in a child, it is neither necessary nor desirable to continue repetition of the test. The older the child, the greater the likelihood of a positive reaction, though the socio-economic level and the environmental habitus of the patient are more accurate indices of expected positive reactors than the mere age of the individual. To put the problem simply, the earlier and more continuously an infant or child is exposed to open adult tuberculosis, the earlier the individual will became sensitized to tuberculoprotein and the higher the incidence of positive tuberculin tests. Hence the necessity for early and repeated tuberculin-testing of all children beginning at one year or earlier in suspected families or environments. Ch'iu, Myers and Stewart[3] in a 10 year follow-up of 446 children with positive reactions and 772 negatively reacting children, found 15 per cent of the early positive reactors with reinfection or adult tuberculosis, and only 1.6 per cent of the early negative reactors had developed reinfection type tuberculosis after a lapse of ten years. These impressive findings emphasize the necessity for continuous avoidance of any exposure of the infant or child to open tuberculosis, the best proof of which is a persistently negative Mantoux test. Considering the importance of the factor of exposure, Armand-Delille has shown that "50 per cent or more infants living in contact with tuberculous parents will become tuberculous by the beginning of the second year of life."

X-RAY

Since 95 per cent of all first infection tuberculosis involves the lungs and tracheobronchial nodes, an x-ray of the chest is made routinely after discovery of a positive Mantoux test to determine the stage of the tuberculous process in the lungs and hilar region. In the reading of lung films, influenzal effects on tracheobronchial nodes must be considered, also the prolonged hilar enlargement following any acute pneumonic process.

An evaluation of the x-ray as a diagnostic aid was made by Hetherington[4] et al. who found pulmonary lesions demonstrable by x-ray in 5 per cent of positive tuberculin reactors at five years of age, in 11 per cent of positive reactors at 10 years and in 22 per cent of positive reactors at 15 years. The limitations of the x-ray, according to Miller,[5] are explained partly by the presence of the overlying "structures of varying density, the factor of cardiac and intrapulmonary vascular movement, and the minute size of many of the calcium deposits." Sweany[6] reports a total handicap of 80 per cent in x-ray examination for the detection of pulmonary lesions of primary tuberculous infection. Serial x-rays are valuable in patients presenting suggestive symptoms.

After the primary complex of tuberculous infection has been completed, the x-ray evidence of the infection may be so entirely lacking that comparison with the earlier films of the series is the only proof of pathology, while fibrosis or calcification of the original zone of involvement or residual calcification of hilar nodes may be the late evidence of primary tuberculous involvement. When reinfection tuberculosis from an exogenous or endogenous source develops, the x-ray is valuable and pathologic changes in the lungs will be more frequently and more definitely recorded.

Discovery of the tubercle bacillus as a diagnostic aid is very difficult in the infant and young child, the obtaining of satisfactory sputum being impractical. Routine stomach washings with centrifuging of the entire stomach contents and isolation of the bacilli have proved satisfactory with many workers in tuberculosis, though the patient with a primary infection is throwing off so few tubercle bacilli that recovery of the organisms even by this more through method is not uniformly successful.

SYMPTOMS

The symptoms of first infection tuberculosis are either entirely absent or so mild that the average parent completely overlooks them. Symptoms, when present, are usually seen at the end of the preallergic phase, when sensitivity is developing and the tuberculin test first becomes positive. There may be declining appetite or complete anorexia; sometimes a definite change of disposition attracts attention, while a slump in school work is noted; vomiting before or during school hours may occur with no apparent reason; cough, if present, is dry, hacking, and non-productive, usually reflex in origin because of irritation of nerve trunks by hypertrophied tracheobronchial nodes. Slight afternoon elevation of temperature may be present, with or without an associated fatigue and irritability. Profuse sweating, either when awake or asleep, is frequently seen. The patient's weight tends to remain stationary or a gradual loss of weight may occur.

PHYSICAL EXAMINATION

Physical examination is of little value in the positive diagnosis of first infection tuberculosis. Other than a varying degree of secondary anemia with its associated generalized lymphadenopathy and a possibly diminished tissue turgor, the examination is negative. The chest may be the suboxygenation type or it may present normal contours and expansion. Certainly examination of the lungs will reveal nothing abnormal. If the usual routine of clinical examination discloses any positive lung findings, the first infection phase has already passed and the more severe reinfection type of adult tuberculosis is present.

The extrapulmonary first infection lesions which constitute 5 per cent of primary tuberculosis in childhood include the intestinal primary complex and the upper respiratory route of invasion. Residuals of the intestinal avenue of infection are found in the mesenteric lymph nodes where calcification is often sufficiently complete to be visualized by x-ray. Both lateral and anteroposterior films are made to demonstrate nodes which might be anterior to the vertebral column.

Primary infection via the upper respiratory route may be the result of ingestion or inhalation of infective material, in which case the tonsils are frequently the focus of initial involvement with the cervical lymph nodes presenting the residual calcification. In this form of first infection tuberculosis the nutritional state of the patient is usually excellent, and differentiation of tuberculous cervical adenitis from ordinary infectious adenitis is made by the Mantoux test with possible x-ray discovery of calcification of the nodes.

SUMMARY

Early diagnosis of first infection tuberculosis is established by routine Mantoux testing with an x-ray check of all possible foci of active infection in the event of a positive test. Care must be exercised in the proper technic of the tuberculin test, and rechecking of the test should be done annually in all previously negative children. Because of overcrowded living conditions and economic factors in general hygiene, the underprivileged child seen in outpatient clinics should have a tuberculin test every six months, so that discovery of the source of the infection may be made sufficiently early to allow the child's first infection to remain benign, thereby minimizing the possibility of development of reinfection adult type tuberculosis from an exogenous source. Prevention of exposure of the individual to open tuberculosis is one of the most conservative and vital measures of modern medicine and every possible step in the consummation of this ideal should be part of the health insurance of every child.

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THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS

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The problem of tuberculosis is quite complex. It is a frequent disease, an infectious disease and an essentially chronic disease. Its social and economic implications are oftimes of such a nature that they overshadow in complexity and importance the purely medical aspects of the disease. Because it is frequent, so frequent still, that it is the most important cause of death in early adult life, it deserves the fullest attention of all agencies concerned, first of which stands the private physician.[5]

The adult or reinfection type of disease presents itself in its least infectious role in the early stages of the malady. Orthodoxically, the disease processes are accordingly more vulnerable to therapy in their incipiency than later, when caseation and ulceration have destroyed lung tissue with direct impairment of the function of that organ; as well as damage to more remote structures by the circulation through the various channels of noxious tuberculo-protein materials which combine to lessen the chances for recovery of the infected individual.

The essential chronicity of the disease with its elbaoration of toxins gives rise to symptoms not unlike those of focal infection elsewhere in the body. The chronically diseased tonsil or the abscessed tooth may evoke a symptom complex similar to that of the tuberculous nodule at the hilus of the lung. The symptoms elaborated are of such a protean nature and varied pattern as to tax the diagnostic acumen of the most experienced clinician.

The diagnosis of tuberculosis is made by no trick of légèrdemain nor by any royal short cut. The final conclusion must be based on the proper evaluation and interpretation of the various bits of information gleaned by the investigator from the examination of the patient. In this process of reasoning, all possible aids must be considered and used. With the improvement in technical adjuncts and a broadening of vision in their use, the clinician today has at his disposal a far greater advantage than did his predecessor of but a few years ago. Not infrequently the diagnosis is of a negative character; the disease is tuberculosis because it is not some one or other of like symptom-producing entities. With the advent of our modern diagnostic adjuncts physicians are liable to experience a sense of security which results in a tendency to lower the acuity with which the various bits of information are sought for. Now, as then, all details are of value.[3]

ETIOLOGIC FACTORS

The inquiring practitioner finds no particular age group the exclusive harbinger of the disease, albeit the highest infection rate is present at puberty, and the incidence remains higher through the two subsequent decades of life. At puberty he may examine with more suspicion the boy than the girl, although the sexes contribute to the disease their quota alike. Pregnancy and the puerperium offset in the female the environmental factors of exposure, trauma and the like in male. One well may ponder on the presence of tuberculosis in the athlete where physical strain and over-exertion seem to rob him of the necessary attributes to combat successfully the disease. Worry and mental strain add to tuberculosis their complement of victims as indeed they do to many other of the ills of which the human flesh is heir. At the termination of exhaustive diseases or even many of the apparently minor intercurrent infections, unless one is particularly alert, he ofttimes finds tuberculosis already present and no longer in its minimal stage. Among certain of the vitamin deficiencies, one may expect to find tuberculosis. Bad housing and the inhalation of irritant gasses and dusts are factors which tend to decrease the individual resistance to the disease. Drolet believes that specific racial immunity does exist, but given equal environmental factors the incidence of infection is practically the same. It is the mortality that varies

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in the different races. Nonetheless, in this vicinity one had best with double vigilance regard the negro patient as a likely source of infection.

IMPORTANCE OF HISTORY

With this knowledge that one may find tuberculosis in no specific group of individuals and must everywhere be on the alert if he intends to find it, the clinician first directs his attention to the history of his patient. Early tuberculosis rightfully has been said to be a disease of symptoms and not of signs. A careful and painstaking history is of paramount importance in the recognition of early tuberculosis and bountifully rewards the physician for his additional time and extra care in the discovery of that early case, where had not this extra effort been spent in careful questioning, the patient might have been doomed to years of invalidism, if not death.

Not infrequently an individual who is numbered among a group in which a tuberculosis case-finding survey has been made, reports to his private physician the finding of a positive tuberculin test. This finding should not, as is too often the case, be overlooked. As private physicians, we should bend every effort to acquaint him with the significance of such reaction and such reactor becoming at some later date a case of active pulmonary tuberculosis.

The history of sustained contact with a consumptive, whether or not the individual be a relative, should be sufficient to put into action the machinery with which the diagnosis of tuberculosis is made.

SYMPTOMS

The symptoms of the disease vary within the widest limits, dependent largely upon the dosage of organisms. When the dosage is large the onset is apt to be acute, with a very toxic picture simulating the acute respiratory infection. If the dosage is small the onset may be insidious, and symptoms are hardly recognizable and frequently are overlooked by both the patient and the doctor.

No single symptom or combination of symptoms is constant in early tuberculosis. General malaise, that indefinable something which makes the patient know that he is ailing, the lact of zest for the ordinary affairs of life in which he regularly gains much enjoyment, is perhaps the most frequent.

Fatigability, often met with early in the disease is described by the patient as a worn out feeling at the end of the ordinary day's labor; or inability to complete, for lack of strength, a task formerly insignificant in nature. Fever, frequently present in late afternoon, more than likely is not suspected by the patient. The wise clinician takes advantage of a daily temperature chart to aid in his diagnosis. The slight febrile rise to 99.2° F. or 99.4° F. in late afternoon is highly suggestive of the disease. Premenstrual elevation of temperature occurs early and remains late in the course of pulmonary tuberculosis. Gastric disturbances of various sorts are often complained of. The derangement of function give rise to anorexia and loss of weight, as the disease progresses. Quite often indeed the patient consults the practitioner because of his digestion rather than symptoms suggestive of pathology in his lungs.

Hoarseness, fogging and tickling in the larynx are also frequent complaints. Hoarseness is apt to subside rapidly only to reappear after a short period of time. Tickling in the larynx sometimes causes a dry hacking cough.

In the female changes of the menstrual rhythm, in particular scanty menstruation or even complete amenorrhea, are apt to usher in pulmonary tuberculosis.

The sudden appearance of a pleural effusion is very suggestive of tuberculosis. The involvement of the pleura is secondary to disease of the lungs. The association of pulmonary tuberculosis with this phenomenon is so well established as to have been included by the late Lawrason Brown in his cardinal diagnostic criteria. It is almost pathognomonic of the disease.

Recent advances in proctology have established that tuberculosis plays only a small role in the etiology of fistula in ano. The mere existence, however, of this lesion

should suggest pulmonary tuberculosis to the wary clinician since the two diseases have coexisted in as much as 40 per cent of a recently concluded series.

The persistent "cold", although more frequently than not the result of chronic suppurative upper respiratory disease, deserves careful consideration before being passed off as of no significance.

Hemoptysis of a drachm or more of blood from a source not otherwise explained, must be considered significant of tuberculosis. The *modus operandi* of these hemorrhages in early tuberculosis arises from the close proximity of the minute lesions with the vascular network accompanying the lesser divisions of the bronchial tree.

As with fistula in ano, spontaneous pneumothorax, which in itself is varied of origin, should put on his guard the physician who is confronted with it as likely being of a tuberculous nature; this especially in young individuals. Less frequently enumerated among the symptoms of early tuberculosis are the night sweats which later in the disease are ofttimes prevalent and quite exhausting. Shoulder and chest pains, flushing of the face, pleural pains and expectoration put in their appearance, as a rule, when the disease is already well established.[6] Productive expectoration is not always present in pulmonary tuberculosis and especially in its early stages. In this connection examination of gastric washings for tubercle bacilli has been productive of positive diagnosis in the absence of positive sputum examination.

PHYSICAL EXAMINATION

To establish the diagnosis of pulmonary tuberculosis the clinician next proceeds with the physical examination. Unhappily a most careful examination of the chest may elicit no abnormal findings in the presence of definite pathology within the chest. Physical signs are noted only when the pathology is close to the surface of the lung and is of a nature that can be detected by the examination. It can not be too strongly emphasized that a negative physical examination should not rule out a tuberculous infection.[4]

The most important physical signs resulting from tuberculous infection of the lungs are noted on auscultation. It follows that to determine abnormalities on physical examination one must be thoroughly familiar with the normal and with the endless chain of variations in the norm itself.

Of greatest value to the average physician is the presence of rales; depending upon the classification, these rales are variously designated as medium coarse rales or moist mucus rales. Most frequently they are noted over the apices, posteriorly along the danger line, anteriorly immediately beneath the clavicle, and laterally high in the axilla. When rales are heard with quiet normal breathing the disease process is likely already to be moderately well advanced. Not infrequently if rales are not heard by quiet breathing, "latent rales" may be elicited by having the patient breathe deeply, exhale, cough and take a deep inspiration. If present, the rales will be heard on the deep inspiration. Of more frequent occurrence in early tuberculosis is the change from vesicular to bronchovesicular breath sounds in the apices. This finding is particularly hard to evaluate in certain individuals. In the right apex anteriorly, broncho-vesicular breathing normally occurs to a variable degree in all individuals. Depending upon the physical makeup and the position of the trachea, it is difficult to determine its presence or absence in the left apex of some healthy individuals.

Percussion is important as an aid in the diagnosis of minimal tuberculous lesions. The lesions at times make their presence known by impairment of the normal resonant note. Again one must keep in mind the normal variations of the upper lobes and properly evaluate changes in thoracic contour, the muscular development and state of nutrition of the patient.

Palpation and inspection add little more than confirmatory evidence in singling out the disease in its incipient stages in the lungs.

X-RAY EXAMINATION

When the physician has completed his history and physical examination he turns

to the x-ray or fluoroscope for further investigation of suspicious leads obtained from the history, or for confirmation of abnormalities detected on physical examination. The roentgenogram is the most important link in the chain of evidence which leads to the diagnosis of pulmonary tuberculosis. When proper technic is used the x-ray rarely fails to demonstrate the disease in the lungs, and when errors do occur they can generally be laid at the door of faulty interpretation. It is not within the scope of this paper to elaborate upon technic or interpretation in roentgenography, but it may be said in passing that failure to get the patient to the x-ray sufficiently early is a primary cause of delay in diagnosis. This has been established by Monte and Blitz[2] in their survey of cases at the Charity Hospital at New Orleans. Fellows,[1] in his case-finding program in the Metropolitan Life Insurance Company, has demonstrated the value of fluoroscopic examination as a method of early diagnosis. It has the factor of cost in its favor, and the time-saving factor is significant as well in the handling of large groups of patients. It cannot replace the roentgenogram in the routine practice of the private physician.

LABORATORY EXAMINATIONS

To weld the final bit of evidence into an unyielding chain of fact the tubercle bacillus is sought for in the sputum or in the gastric lavage. Direct smears, concentrates and cultures are the usual routine of procedure. Repeated negative examinations for tubercle bacilli should not rule out the diagnosis of tuberculosis. Animal inoculation frequently is fruitful of a positive diagnosis where other methods fail.

SUMMARY

It is seen that the diagnosis of tuberculosis is dependent upon more than any one examination. Frequently all methods of approach must be used to make the diagnosis of pulmonary tuberculosis. The history may supply the lead, and the physical examination is of value when the findings are positive. The x-ray supplies important confirmative evidence, and the finding of tubercle bacilli in the sputum supplies an irrefutable conclusion to the story. To avoid the misfortune of a missed early diagnosis, the physician needs in addition a certain awareness to the possibility of the presence of the disease, and must be constantly on the alert to direct properly his determination through the maze of conflicting possibilities in order to establish the diagnosis.

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STUDIES WITH ANTIGENS

V. ANALYSIS OF COMPARATIVE SKIN REACTIONS BY MEANS OF THE CHI-SQUARE STATISTIC*†

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INTRODUCTION

Dorfman and Efron[1,2] have shown that the curve of skin reaction sizes from serial dilutions of an extract is discontinuous. They have demonstrated that, in a given subject, a skin reaction of given size can be produced by varying concentrations of the same extract; hence, equal sized skin reactions may occur from extracts which differ widely in potency. They have also shown that there is no inherent difference between the reactivity of the radial and ulnar sides of the skin of the forearm.

Skin reaction sizes cannot be expressed

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quantitatively and must be grouped in descriptive categories. There is no known method of measuring skin reaction sizes with precision, because skin reactions to allergens are three-dimensional, whereas any practical, reasonably adequate measuring technic is at best two-dimensional. The best estimation of comparative skin reaction sizes is that which is least exacting and therefore least subject to error. The least exacting characterization of a pair of reactions is whether one is larger or smaller than the other, or whether the reactions are equal in size.

The technic used in this study of comparative skin reactions is based solely upon comparison of the reaction sizes in pairs of tests. The arbitrary classification by degree of reaction, as, for example, marked, moderate, is included in this study only because it is a method usually employed in classifying skin reactions. We will show that the equal, larger or smaller designation of skin reactions gives all the information that is statistically significant for their comparison.

TEST METHOD

We have modified slightly our original technic. Instead of attempting to make equal sized parallel scratches with a needle, we used a small scarifier, with a blade 1/16 of an inch wide. Scratches were made by a single twist of the scarifier and were placed at least an inch and a half apart in parallel rows along the vertical axis of the forearm, one row on the ulnar side of the arm and the other on the radial side.

The tests were performed with serial dilutions, and identical dilutions were always placed on parallel scratches at the same level of the forearm. All tests were made and read by the same person (B. G. E.). The reactions, read at the end of twenty minutes, were examined by pairs, and the size of each reaction on the radial side of the forearm compared to that of the corresponding reaction on the ulnar side. This comparison determined whether the two reactions were equal in size or whether one was larger than the other. Only after this estimate was made, were the reactions classified also as to the degree of reaction.

The classifications of degree of reaction were recorded as marked plus, marked moderate, moderate, slight, doubtful, and negative. Since there can be no difference in size when reactions are negative, readings were discontinued at the dilutions at which both of a parallel pair of tests were estimated as negative.

APPLICATION OF THE CHI-SQUARE STATISTIC[3]

A. Extracts of the same potency. Table I presents the observations on 501 comparative skin reactions which were made on 40 house-dust-sensitive patients with serial dilutions of the same extract.* In 326 comparative tests, the parallel reactions were

TABLE I

Case number	Reactions equal size	Ulnar reactions larger	Radial reactions larger
1.	11	5	0
2.	9	3	4
3.	8	6	2
4.	12	2	2
5.	13	3	0
6.	10	3	3
7.	7	1	0
8.	11	0	4
9.	10	4	2
10.	11	2	3
11.	10	3	3
12.	6	1	1
13.	11	3	2
14.	8	5	3
15.	7	2	7
16.	11	1	2
17.	12	0	2
18.	9	0	2
19.	12	2	1
20.	15	0	0
21.	12	0	4
22.	12	2	1
23.	10	2	3
24.	12	3	1
25.	8	2	5
26.	2	0	4
27.	6	4	6
28.	5	0	3
29.	6	0	0
30.	8	0	0
31.	5	1	0
32.	9	2	2
33.	5	5	3
34.	2	5	1
35.	4	2	2
36.	3	4	1
37.	0	3	5
38.	3	3	2
39.	6	1	1
40.	5	1	2

*The purified extract used in this study was made according to the technic reported by Boatner, Efron and Dorfman.[4, 5]

TABLE II

	Equal Size Reactions	Larger Reactions	Smaller Reactions	Total
Radial (a)	326	89	86	501 (n)
Ulnar (a')	326	86	89	501 (n')
Total (a+a')	652	175	175	1002 (n+n')
$\frac{\text{Radial}}{\text{Total}}\ \frac{a}{a+a'} = p$	.5000	.5086	.4914	$.5000 = \bar{p} = \frac{n}{n+n'}$
a p	163.0000	45.2654	42.2604	$250.5000 = n\,\bar{p}$

$$\bar{p}\,\bar{q} = \bar{p}\,(1-\bar{p}) = .2500$$

$$\Sigma\,(a\,p) = 250.5258$$

$$\Sigma\,(a\,p) - n\,\bar{p} = .0258$$

$$\chi^2 = \frac{\Sigma\,(a\,p) - n\,\bar{p}}{\bar{p}\,\bar{q}} = .1132$$

equal in size; in 89 tests, the reactions on the radial side were larger than the corresponding reactions on the ulnar side; and in 86 tests, the reactions on the ulnar side were larger than the corresponding reactions on the radial side.

Table II shows the computation of chi-square** for this set of data. The chi-square test is a statistical means of showing agreement between observation and hypothesis. The theoretical expectation of the value of chi-square in this test is based upon the hypothesis that no difference in skin reaction sizes should result when a comparative test is made with the identical extract. The result of the computation indicates that the observed value of chi-square does not differ significantly from the theoretical expectation of that value. Therefore, the hypothesis of uniformity was not disallowed.

The original observations shown in table I are based upon a representative sample drawn from the whole population of comparative skin reactions. For purposes of demonstration, this large sample of 501 observations was broken into smaller samples; for instance, 16 samples of 40-48 observations each, and the chi-square value of each small sample computed. In this way, we have computed from the original observations the largest number of uncorrelated chi-square values for various sized samples. Table III represents these values. Such a division is useful because medical statistics are nearly always concerned with small samples.

Conventionally, $P = .05$ is the accepted statistical level of significance. However, a more stringent level such as $P = .02$ or $P = .01$ may be adopted to suit the requirements of the analyst. When $P = .05$ is used as the level of significance, the probability of our conclusion being valid is 19 out of 20, whereas when $P = .01$ is used as the level of significance, the probability of our conclusion being valid is 99 out of 100.

If $P = .05$ is taken as the level of significance, a value of chi-square equal to or

**Chi-square was computed by the Brandt and Snedecor formula.

TABLE III

Column	1		2		3		4		5		6		7		8		9	
Number comparative tests in each Sample	29-32		40-48		60-64		73-80		89-96		106-112		136-142		250-251		501	
	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square
	2	2.224	2	6.400	2	5.334	2	8.963	2	7.335	2	2.649	2	4.666	2	0.382	2	0.115
	2	2.224	2	1.385	2	0.091	2	0.666	2	0.890	2	0.190	2	3.200	2	1.078		
	1	0.000	2	1.200	2	0.334	2	1.852	2	2.942	2	0.857	2	3.056				
	2	2.000	2	0.947	2	5.815	2	1.200	2	0.000	2	3.800						
	2	0.180	2	9.142	2	2.667	2	0.061	2	0.200								
	2	1.375	1	0.000	2	0.720	2	0.782										
	2	6.000	2	0.667	2	3.600												
	1	0.000	2	2.380	2	3.161												
	1	0.000	2	0.184														
	1	0.000	2	0.671														
	2	0.182	2	0.074														
	2	2.134																
	2	1.636																
	1	0.000																
	2	4.546																
	2	0.400																
Total Chi Square		22.901		22.920		21.720		13.524		11.367		7.696		10.922		1.460		0.115
Summation of Degrees of Freedom	27		21		16		12		10		8		6		4		2	
Value of P	.70-.80		.50-.30		.20-.10		.50-.30		.60-.30		.80-.30		.10-.05		.90-.80		.95-.90	

greater than 5.991* would be interpreted as disallowing the hypothesis of uniformity. Such a value occurs once in column 1, twice in column 2, once in column 4, and once in column 5. If P = .02 is taken as the level of significance, a chi-square value equal to or greater than 7.824 would be interpreted as disallowing the hypothesis of uniformity. Such a value occurs once in column 2 and once in column 4. If P = .01 is taken as the level of significance, a value of chi-square equal to or greater than 9.210 would be interpreted as disallowing the uniformity hypothesis. Such a value does not occur in any of the columns. The hypothesis of uniformity was not disallowed, although we observed in some of the columns a greater number of significant values of chi-square than was expected when P = .05 or P = .02 was used. This follows from the fact that the sum of any number of uncorrelated chi-square values is itself distributed in the chi-square distribution. The total chi-square test is a much more sensitive test than any number of independent values of chi-squares. For example, although the observed value of chi-square was greater than 5.991 for two samples out of 11 in column 2, when we should expect only one out of 20 to exceed such a value, the total chi-square value contributed by all the samples in this column was found to be 22.920. For 21 degrees of freedom, the corresponding value of P is between .50 and .30.

Our conclusion from this analysis is that parallel comparative skin tests made with serial dilutions of the same extract do not show statistically significant differences in skin reaction size.

B. Extracts of Different Potency. Table IV represents the results of 403 comparative skin tests made on 55 house-dust-sensitive patients with extracts of differing potency. In each test, the solution of the extract used on one of the parallel scratches was twice as concentrated (by per cent extract in solution) as that used on the corresponding parallel scratch. These data show that equal sized reactions were obtained in 192 tests and that the more concentrated solution produced a larger reaction in 180 tests and a smaller reaction in 31 tests. The chi-square value computed from these data was found to be 210.448 which, for two degrees of freedom, gives a corresponding value of P less than .01. This

TABLE IV

Case number	Equal size reactions	Sol. double concen. reactions larger	Sol. double concen. reactions smaller
1.	5	3	0
2.	3	2	0
3.	3	3	1
4.	1	7	0
5.	4	3	1
6.	4	4	0
7.	4	3	0
8.	5	3	0
9.	2	4	1
10.	3	5	0
11.	2	6	0
12.	3	4	0
13.	4	0	4
14.	4	2	2
15.	2	6	0
16.	6	1	1
17.	4	3	1
18.	2	6	0
19.	5	1	2
20.	4	4	0
21.	3	5	0
22.	3	4	0
23.	3	4	0
24.	3	4	0
25.	7	0	0
26.	5	3	0
27.	6	1	1
28.	6	1	0
29.	1	6	1
30.	4	2	2
31.	4	3	1
32.	5	3	0
33.	3	4	1
34.	5	3	0
35.	5	2	1
36.	7	1	0
37.	4	4	0
38.	5	2	1
39.	3	4	0
40.	3	5	0
41.	1	7	0
42.	3	5	0
43.	5	3	0
44.	2	3	3
45.	4	1	3
46.	2	6	0
47.	2	3	3
48.	3	4	1
49.	3	5	0
50.	1	4	0
51.	1	3	0
52.	4	2	0
53.	1	3	0
54.	3	2	0
55.	2	0	0

*For two degrees of freedom, when chi-square is 5.991, the corresponding value of P is .05; when chi-square is 7.824, the corresponding value of P is .02; when chi-square is 9.210, the corresponding value of P is .01.

TABLE V

Column	1		2		3		4		5		6		7		8		9		
Number Comparative Tests in each Sample	28-32		36-40		60-64		75-79		89-95		107-111		131-142		200-203		403		
	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	
	2	21.77	2	29.45	2	44.18	2	65.63	2	55.54	2	62.44	2	73.09	2	109.23	2	210.45	
	2	22.53	2	36.37	2	20.63	2	23.05	2	50.27	2	65.36	2	56.97	2	101.41			
	2	12.73	2	3.60	2	45.07	2	32.12	2	8.47	2	55.88	2	84.10					
	2	8.00	2	23.27	2	45.07	2	53.90	2	46.41									
	2	21.77	2	30.00	2	19.93	2	34.28											
	2	24.00	2	7.11	2	20.00													
	2	12.46	2	16.13															
	2	8.00	2	38.35															
	2	15.13	2	12.00															
	2	30.44	2	23.12															
	2	4.00																	
	2	17.82																	
	2	38.00																	
Total Chi Square		236.65		219.40		194.88		209.00		160.69		183.68		214.16		210.64		210.45	
Summation of Degrees of Freedom	26		20		12		10		8		6		6		4		2		
Value of P	Less than 0.01		Less than 0.01		Less than 0.01		Less than 0.01		Less than 0.01		Less than 0.01		Less than 0.01		Less than 0.01		Less than 0.01		

means that if the solutions tested had been of equal potency, such a result would have occurred only once in more than 100 trials. Since once in more than 100 trials is an unlikely occurrence, the test disallows the hypothesis that the solutions were equal in skin reacting activity.

As above, this large sample was broken down into small samples, for each of which a chi-square value was computed. These are presented in table V. In this tabulation, we observe that the value of chi-square is less than 5.991 once in column 1, once in column 2, and not at all in any of the other columns. Chi-square values less than 7.824 occur once in column 1 and twice in column 2; chi-square values of less than 9.120 occur three times in column 1, twice in column 2, and once in column 5. However, the more sensitive total chi-square tests show that for each column the observed value of chi-square differs significantly from the value which would be expected if these solutions were of equal potency. For each of the columns, therefore, the hypothesis of uniformity is disallowed. From these studies, we conclude that there is an actual difference in the skin reacting potencies of the two extracts.

INAPPROPRIATENESS OF THE DEGREE CLASSIFICATION

The chi-square test may be used to show the existence of appreciable error on the part of the observer when reactions are classified according to degree of reaction rather than according to whether one of a pair of parallel reactions is equal to, or larger or smaller than the other. In the degree classification, the experimenter is called upon to make as many distinctions as there are sizes of reactions to be classified and to keep these unvaried from day to day. He must never call one reaction marked moderate and another of the same size marked. The existence of such errors is illustrated in table VI, in which the data classified according to degree of reaction are analyzed by means of the chi-square statistic, both for the whole sample and for various independent sub-samples drawn from the whole sample.

In this table (VI), the value of P corresponding to the total chi-square value decreases as the size of the sub-sample increases. For instance, the value of P for sample sizes of 30-32 observations is .90 to .80; for sizes of 93-96, it is .70 to .50; for sizes of 141-145, it is .50 to .30; and for one sample of 501 observations, it is just more than .05. It can be shown that a slight increase in the size of the sample would have produced a significant chi-square value. Thus, in the degree classification, the size of the sample is of great importance in interpreting the data.*

It must be noted that this method is in no way a test of comparative reactions, because each test is apparently not actually compared with its parallel. The test really compares the reaction sizes on the ulnar and radial sides of the forearm. On the assumption, based on these studies, that the same extract produces no significant difference between reaction sizes on the radial and ulnar sides of the arm, the distribution of reaction sizes should be identical for the two sides. As the size of the sample is increased, it is possible, by means of the chi-square statistics, to detect smaller and smaller differences and when the sample number reaches about 530 cases, the existence of significant experimental errors in degree classification becomes apparent. Therefore, it becomes evident that not only is the hypothesis tested by the degree classification relatively unimportant, but also that such classification is inappropriate for comparative tests.

The equal, smaller or larger designation of comparative skin reactions has been checked by the chi-square statistics and has been shown to give all the information which is statistically significant for purposes of comparison.

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*Note that the chi-square values are computed from a 2 x 7 table instead of from a 2 x 3 table, as in the previous cases. This increases the number of degrees of freedom and so increases the chi-square value that is associated with the level of significance. The number of degrees of freedom is determined after making corrections for continuity.[6]

TABLE VI

Column	1		2		3		4		5		6		7		8		9	
Number Comparative Tests in each Sample	15-16		30-32		61-64		93,96		108-112		141-143		212-215		427		601	
	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square	Degrees Freedom	Chi Square
	1	0.473	3	0.989	4	3.628	4	4.947	4	4.764	4	8.326	4	8.716	6	9.989	6	12.463
	1	0.532	1	0.250	5	3.452	4	2.668	4	3.310	4	4.201	6	4.212				
	2	2.750	2	6.266	3	0.108	4	5.166	5	3.414	5	2.689						
	1	0.000	4	1.160	3	4.630	5	1.271										
	1	0.000	3	1.133	3	0.649												
	1	1.646	1	1.036	4	0.879												
	1	0.600	2	8.054														
	1	0.500	3	0.000														
	1	0.125	1	0.598														
	2	0.679	3	0.142														
	1	0.182	1	0.074														
	1	1.130	3	0.553														
	1	4.599	3	1.148														
	1	0.535																
	1	0.000																
	2	3.000																
	1	0.000																
	1	1.223																
	1	0.136																
	1	0.000																
	1	0.137																
	1	0.000																
	1	0.000																
	2	0.532																
	1	0.632																
	1	0.125																
	1	0.506																
Total Chi Square		19.812		21.392		13.246		14.052		11.488		15.186		12.928		9.989		12.463
Summation of degrees of freedom	31		30		22		17		13		14		10		6		6	
Value of P	More than 0.05		.90-.80		.95-.90		.70-.50		.70-.50		.50-.30		.30-.20		.20-.10		.10-.05	
Difference of * $\sqrt{2Y^2} - \sqrt{2n-1}$	-1.52																	

*When the number of degrees of freedom is greater than 30, the value of $\sqrt{2Y^2} - \sqrt{2n-1}$ should be calulated. When this value is found to be 1.65 then P = 0.05; if it is 2.05, P = 0.02; if it is 2.33 then P is .01; if it has still greater value P is less than .01

SUMMARY

1. Five hundred and one comparative tests on 40 house-dust-sensitive patients made with serial dilutions of the identical extract reveal no significant difference in reaction size between the radial and the ulnar sides of the forearm.

2. Four hundred and three comparative tests were made on 55 house-dust-sensitive patients. In each test the solution of the extract used on one of the parallel scratches was twice as concentrated (by per cent extract in solution) as that used on the corresponding parallel scratch. These tests reveal a significant difference in the reaction sizes between the two extracts.

3. Therefore, significant differences in reaction sizes when different extracts are tested are attributable to differences in potencies of the extracts and not to sampling errors in the tests.

4. The use and importance of the chi-square statistic for the analysis of comparative skin tests is presented.

5. The equal-larger-smaller classification of comparative skin reactions is shown to make full utilization of the information given in the comparative tests.

6. The degree classification of skin reaction sizes, because of the sampling errors introduced in the estimation of reaction sizes, is shown to be inappropriate for statistical analysis of comparative tests.

We are indebted to Dr. W. R. Pabst for his assistance in the preparation of this manuscript.

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THE MEDICAL SOCIETIES OF LOUISIANA PRIOR TO THE WAR BETWEEN THE STATES

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NEW ORLEANS

PART III

THE FIRST PARISH SOCIETIES AND THE STATE MEDICAL SOCIETY

THE WEST FELICIANA MEDICAL SOCIETY

Before discussing the part played by the Physico-Medical Society in the formation of the Louisiana State Medical Society, it is necessary to trace the organization of several of the parish societies, although not a great deal is known about some of them. The first local society to be organized outside of New Orleans was in West Feliciana, in 1845. A copy of the "Rules and Regulations" as drawn up for the West Feliciana Medical Society was sent to the editor of the New Orleans Medical Journal, who seemed to think the code of medical ethics highly commendable. The society also appointed a Committee of Honor which was requested, among its other duties, "to interpose their best endeavors to cause a friendly reconciliation, whenever apprised of any misunderstanding that may unfortunately occur between members of the Society." Meetings were scheduled in St. Francisville at three-month intervals.[29] The first officers were:

P. B. McKelny, M. D., President.
Thomas Beaumont, M. D., Vice-president
D. B. Gorham, M. D., Treasurer
Samuel A. Jones, M. D., Corresponding Secretary
G. W. Prunell, M.D., Recording Secretary
Committee of Honor—W. G. Austin, M. D., William Ingalls, M. D., Thomas P. Linton, M. D.

THE ATTAKAPAS MEDICAL SOCIETY

The Attakapas Medical Society was organized November 10, 1846, at New Iberia, and, although the attendance was not very

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large, others who were prevented from attending sent assurances of their cooperation. The first officers were:[30]

Jerome Mudd, A. M., M. D., President

Joseph W. Lyman, M. D., Vice-president

J. B. Hacker, M. D., Recording Secretary

Jas. B. Dungan, M. D., Corresponding Secretary

John Augustine Smith, M. D., Treasurer

Censors:

St. Mary's Parish—Jas. T. Smith, M. D., C. R. Fassit, M. D.

Lafayette—John G. Howard, M. D., G. W. Scranton, M. D.

St. Martin—Edward Shiel, M. D., Eugene Wild, M. D.

Vermilion—H. J. Sanders, M. D., G. Mills, M. D.

Meetings were to be held twice yearly, at New Iberia, on the second Tuesdays in November and in May, but after the organization meeting in November, 1846, nothing was heard of the society until May 9, 1848. At this meeting a report was read on the epidemic of yellow fever which had occurred in the vicinity of Breaux's Bridge during the summer and fall of the preceding year, but action was deferred on it until it could be studied further. Dr. Mudd read the report of the committee on "Laws to regulate the practice of medicine and to incorporate the Attakapas Medical Society," which was ordered to be filed.

On motion of Dr. Mudd a committee (Drs. E. K. Fassett, G. Mills, and G. W. Scranton) was appointed to address the members of the Western Medical Board "To ascertain from each one of the said board as to a convenient time for meeting to take the necessary steps to procedure a reorganization of said board to secure regular action in the future."[31] Evidently the Western Board, which had been organized in 1817, was functioning rather badly.

This meeting was presided over by the president, Dr. J. B. Dungan, and was attended by Drs. A. J. Saunders, E. K. Fassett, Jas. F. Fontaine, Jerome Mudd, Joseph Lyman, W. G. Mills, E. Shiel, A. Duperier, G. W. Scranton, R. C. Hilliard, R. H. Day, J. H. Baldridge, J. T. Alexander, E. F. Beauchamp, J. G. Howard, and J. B. Hacker. The latter, with Dr. James T. Smith, was appointed to prepare essays for the next meeting.

The Planters Banner,[32] published at Franklin, carried a brief notice of the Society in the June 22, 1848, issue: "We have received from Dr. Duperier of New Iberia, a copy of the constitution, by-laws and code of ethics of the Attakapas Medical Society. Also a list of the physicians who have become members. This society has been formed for the purpose of mutual improvement, the advancement of medical science, the elevation of the honor and dignity of the profession and for the promotion of harmony, good feeling and professional etiquette."

The same newspaper, for October 19, 1848, carried the notice of a meeting of the society for November 14. It does not seem to have been held until December 22. The roll call was answered by Drs. J. B. Dungan, A. Duperier, J. B. Hacker, Jerome Mudd, J. T. Alexander, R. C. Hilliard, A. J. Saunders, C. R. Fassit, W. G. Mills, and J. M. Lyman, and Drs. D. E. Meade and E. P. Beauchamp were elected to membership.[33]

At this meeting a committee of three (Drs. W. G. Mills, G. W. Scranton, and R. C. Hilliard) was appointed, by resolution, to address the legislature on the subject of amending the law regulating the practice of Physic in the State. Dr. E. Shiel and Dr. J. A. Smith were appointed to prepare essays for the next meeting, and the following officers were elected:

Dr. J. M. Lyman, President

Dr. W. G. Mills, Vice President

Dr. J. B. Hacker, Recording Secretary

Dr. D. E. Meade, Corresponding Secretary

Dr. A. Duperier, Treasurer

Censors for Lafayette—Drs. G. W. Scranton, E. F. Beauchamp.

Censor for Vermilion—Dr. J. T. Alexander

Censors for St. Martin—Drs. R. C. Hilliard, J. A. Smith

Censors for St. Mary—Drs. C. R. Fassit, J. T. Smith

FIRST ATTEMPTS TO FORM A STATE MEDICAL SOCIETY

Perhaps the most important activity of the Attakapas Medical Society and Physico-Medical Society of New Orleans was the part which they played in the formation of the Louisiana State Medical Society. At the December 22, 1848, meeting of the Attakapas Society a committee consisting of Drs. A. Duperier, J. B. Hacker and C. R. Fassit was appointed to correspond with the Physico-Medical Society on the propriety of holding a State Medical Convention in New Orleans on the first Tuesday in March, 1849. Drs. D. E. Meade, A. Duperier, C. R. Fassit, J. M. Lyman and J. Mudd were appointed delegates to the proposed convention, the call for which was issued in the following words:[34] "Whereas it is the opinion of the physicians comprising the Attakapas Medical Society, that a State Medical Society would tend to create concert of action between the physicians throughout the State, and thereby be conducive to the advancement of Medical Science in the State of Louisiana:—therefore Resolve that the Attakapas Medical Society convention, to be composed of delegates from the different country and Parish Societies in the State, and of the Medical men throughout the State, to convene in the city of New Orleans on the first Tuesday in March in the year 1849 for the purpose of organizing a general State Medical Society."

At the January 6, 1849, meeting of the Physico-Medical Society of New Orleans the communication from the Attakapas Medical Society was read and the following resolutions were unanimously adopted:[35]

"*1st. Resolve:* That the Physico-Medical Society have heard with pleasure that a 'State Medical Convention' is about to assemble on the second Tuesday on the ensuing month of March.

"*2nd. Resolve:* That we will cheerfully cooperate with our brethren throughout the State on their laudable object in meeting.

"*3rd. Resolve:* That the Physico-Medical Society do hereby tender to the State Medical Convention the use of their hall.

"*4th. Resolve:* That the corresponding Secretary of the Society be instructed to correspond with the Attakapas Medical Society on the subject of a State Medical Society and to transmit to that body a copy of the foregoing resolutions.

"*5th. Resolve:* That the foregoing resolutions be published in the New Orleans Medical and Surgical Journal.

B. H. Moss, Sec.; Thos. Hunt, M. D. Pres."

Only a few physicians appeared for the March meeting, which convened in the hall of the Medical College. On motion of Dr. Thomas Hunt, Dr. S. W. Dalton was appointed secretary, and Dr. Hunt also offered the following resolution:[36]

"Resolved, that a Medical convention of all resident licensed physicians of the State of Louisiana be united to assemble in the hall of the Medical College of the State, on the first Monday in December, 1849."

The Physico-Medical Society[37] passed the following resolution on the subject:

"Resolved—That the Secretary be requested to call the attention of the physicians of this state, by a notice in the forthcoming number of the New Orleans Medical and Surgical Journal to the Medical Convention to be held in this place, the first Monday in December next, for the organization of a State Medical Society."

THE FOUNDING OF THE STATE MEDICAL SOCIETY

The adjourned meeting convened on the proper date and was organized with Professor James B. Jones in the chair and Dr. S. W. Dalton acting as recording secretary. Dr. Simonds' motion that the convention resolve into a state medical society was carried and Dr. Hale of Alexandria was elected president, Dr. Axson of New Orleans recording secretary, Dr. Fenner corresponding secretary and Dr. Hare treasurer. The chair appointed Drs. Simonds, Barton, Penniston and Mather to draft a constitution. The document which they produced was brief, but sufficiently explicit to define the objects of the association and the duties of the officers and members.

The officers were to constitute a Board of Administration empowered to perform all necessary business between regular meetings. Eight standing committees,[38] from each of which an annual report was expected, were also appointed, as follows:

"1. On practical medicine — Dr. James Jones.
2. On diseases peculiar to negroes—Dr. S. A. Cartwright.
3. On the indigenous botany of the state and materia medica generally—Dr. J. L. Riddell.
4. General and social hygiene of the State, vital statistics, and meteorology—Dr. E. H. Barton
5. On medical education and the license law—Dr. W. P. Hort
6. On the sale of drugs and quack medicines and adulteration of medicine—Dr. G. A. Nott.
7. On physiology and pathology — Dr. Bennet Dowler
8. On midwifery and diseases of children —Dr. A. H. Cenas."

THE 1851 SESSION

At the 1849 session five parishes were represented by 48 members, 45 of whom were from Orleans Parish. The second annual session was scheduled for December 3, 1849, but actually occurred March 10, 1851. Again most of the members were from Orleans Parish. Four of the chairmen of standing committees were not prepared to report and begged to be excused. Reports were read by Dr. J. L. Riddell for the Committee on the Indigenous Botany of the State; by Dr. W. P. Hort, for the Committee on Medical Education and License Law; by Dr. E. H. Barton, for the Committee on the General and Social Hygiene of the State, and by Dr. S. A. Cartwright, for the Committee on the Diseases Peculiar to Negroes. Dr. Cartwright's report was particularly interesting, and a full discussion was participated in by the membership on it and the other reports.

The following committees were appointed:[39]

"1: On medical education and the license law—A. F. Axson, M. D., Chairman
2. On surgery and surgical operations—Warren Stone, M. D.
3. On physiology and pathology—Thos. Hunt, M. D.
4. On midwifery and the diseases of women and children—W. P. Hort, M. D.
5. On practical medicine—J. M. W. Picton, M. D.
6. On general therapeutic, materia medica and pharmacy — J. C. Simonds, M. D.
7. On the hygiene, meteorology and vital statistics of the State—E. D. Fenner, M. D.
8. On the botany and natural history of this and the adjoining states—J. Hale, M. D.
9. On the diseases peculiar to negroes and of southern climates—S. P. Davidson, M. D.
10. On the adulteration of medicines, the sale of drugs—Mr. E. C. Bolton."

Other committees were also organized, one of which had as its purpose the effecting of changes in the medical license law and to suppress wholesale quackery as it then existed. Another duty of this committee was the establishment of a registry of marriages, births and deaths throughout the state. Later in the year the Physico-Medical Society of New Orleans joined with the State Society in petitioning the Legislature to pass "suitable laws for the faithful recording of marriages, births and deaths," the following resolution being adopted January 31, 1851:[40]

"Resolved that the Physico-Medical Society highly approved of the memorial at the State Medical Society to the Legislature, on the subject of registration of births, deaths and marriages, and highly recommend the adoption of its suggestions."

At the 1851 meeting the State Society recommended to the profession the patronage of "Southern Medical Reports edited by Dr. E. D. Fenner."

THE 1852 SESSION

The third annual meeting of the State Society,[41] like the previous ones, was held at the hall of the Medical College, and the

report of the proceedings of this meeting and the fourth meeting are available to the writer. The third meeting was called to order by the president, Dr. E. H. Barton, March 8, 1852, and lasted through March 12. Seventy of the 76 members who answered the roll call of members were from Orleans Parish. At the first meeting the usual reports were accepted and filed, and the next day the following officers were elected and were installed at once.

President—Dr. J. M. W. Picton

Vice-presidents—Drs. Logan, McCloud, Davidson, Bein, Farrell

Corresponding Secretary—Dr. J. C. Simonds

Recording Secretary—Dr. G. T. Browning

Treasurer—Mr. E. C. Bolton

At the meeting of March 10 it was decided that it was not necessary to incorporate the society. On the previous day it had been decided that since the new law of the state concerning medical licensure was not in operation, non-licentiates were eligible for membership. On the second day it was decided that to be eligible for membership in the society a physician must hold a diploma from a regularly constituted medical school of known character. Additional reports were read on the various days of the meeting, including the report on midwifery and diseases of women and children, which had been prepared by the late Dr. Hort and was read by Dr. Browning.

THE 1853 SESSION

The fourth annual meeting of the Louisiana State Medical Society[42] was called to order March 14, 1853, in the hall of the Medical College of the University of Louisiana, by the president, Dr. J. M. W. Picton. Twenty members were present and 15 others were admitted into full membership. The next day 42 members answered the roll call and heard the annual address of the President. The following officers were elected:

E. D. Fenner, M. D., President

Joseph Rouanet, M. D., Vice-president

A. Hester, M. D., Vice-president

J. W. P. McGimsey, M. D., Vice-president

J. Dominique, M. D., Vice-president

Thos. Cottman, M. D., Vice-president

N. B. Benedick, M. D., Corresponding Secretary

D. Macgibbon, M. D., Recording Secretary

E. C. Bolton, Treasurer

The remaining three days of the meeting were taken up with reading and discussion of various reports. It was decided to incorporate the Society under the general Incorporation Act of the State, and the following committees were appointed:

"1. On medical education—Dr. A. W. Ely
2. On anatomy, surgery, and surgical anatomy—Dr. I. L. Crawcour
3. On physiology and pathology—Dr. A. F. Axson
4. On midwifery and diseases of women and children—Dr. N. B. Benedick
5. On practical medicine—Dr. P. B. McKelney
6. On general therapeutics, materia medica and pharmacy—Dr. J. S. Copes
7. On meteorology and hygiene of the state and its vital statistics—Dr. E. H. Barton
8. On diseases peculiar to negroes and to a Southern climate—Dr. J. W. P. McGimsey
9. On adulteration of medicines and the sale of drugs and nostrums—Mr. E. C. Bolton
10. On the medical botany of the state—Dr. J. Hale."

THE 1854 SESSION

The fifth annual session of the State Society convened at the Medical College in New Orleans March 13, 1854, with the president, Dr. Fenner, in the chair. The attendance, for some reason, seems to have been very poor. Dr. Axson of New Orleans declined to accept the presidency, and the following officers were elected:[43]

Dr. E. H. Barton, President

Dr. N. B. Benedick, Vice-president

Dr. R. Bein, Vice-president

Dr. E. R. Brownell, Vice-president

Dr. G. T. Browning, Corresponding Secretary

Dr. D. Macgibbon, Recording Secretary
Dr. J. D. Foster, Treasurer

At this meeting a very interesting paper was read, by request, by Dr. Riddell, dealing with the sewerage of the city and prepared by the Sanitary Commission, of which he was a member. Other interesting reports were read by Dr. Copes, Chairman of the Committee on General Therapeutics, by Dr. McKelney, Chairman of the Committee on Practical Medicine, and by Dr. Crawcour, Chairman of the Committee on Anatomy, Surgery, and Surgical Anatomy.

THE 1855 SESSION

At the sixth session, which was held February 5, 1855, in the usual place, the retiring president, Dr. E. H. Barton,[44] delivered an important address, in which he said in part:

"Every invitation has been extended to our brethren in the rural districts to unite with us; every courtesy felt and offered; the honors of office have been participated in with them, and opportunities for distinction on committees; all in vain; and with the single exception of the Natchitoches Medico-Chirurgical Society no application for membership in the State Medical Society has been received from the local medical Societies, although the honor of suggesting it orginated in the country."

Dr. Warren Stone was elected president at this meeting and presided over all of the remaining sessions. The annual assessment on members was reduced from $5.00 to $2.00, and the Natchitoches Medico-Chirurgical Society applied for membership.

Dr. Barton's outlook on the prospects of the State Society was not unduly pessimistic, for no further meetings seem to have been held after the sixth session, in 1855. In 1878, Dr. Stanford E. Chaillé, writing in the New Orleans Medical and Surgical Journal on the occasion of a second attempt to organize a state medical society, called attention to Dr. Barton's address and suggested that those who were engaged in the present attempt should remember the lessons to be learned from the failure of the first state society.

PART IV

OTHER NEW ORLEANS SOCIETIES
PARISH SOCIETIES

THE NEW ORLEANS ACADEMY OF SCIENCES

Although the Physico-Medical Society of New Orleans was fairly active during the years the state society was functioning, the physicians of New Orleans apparently felt the need of another organization and March 21, 1853, five gentlemen, Drs. Bennet Dowler, N. B. Benedick, Howard Smith, J. S. Copes, and H. D. Baldwin, "met by previous agreement to perfect an organization to a view to mutual improvement in the medical and natural sciences:"[45]

The constitution,[46] adopted April 25 of the same year, stated in part:

"Article I: Sec. 1.—That this association shall be styled the New Orleans Academy of Sciences, and its sole object shall be the advancement of Science, properly so called in all its various departments.

"Sec. 2—The Academy may . . . establish lectures in the various Sciences, and also a library and a museum whenever its funds shall admit.

"Article II: Sec. 1—The New Orleans Academy of Sciences shall consist of the following twenty-seven gentlemen, its founders:

"Howard Smith, M. D., Edward C. Bolton, Esq., Josiah Hale, M. D., I. L. Crawcour, M. D., Noah B. Benedick, M. D., D. F. M. Mitchell, Esq., H. D. Baldwin, M. D., Henry Hughes, Esq., W. B. Lindsay, M. D., Prof. W. C. Duneon, A. M., Albert W. Ely, M. D., Prof. R. H. Clulton, J. S. Copes, M. D., W. P. Riddell, A. B., J. C. Simonds, M. D., Rev. W. A. Scott, D. D."

The following officers were elected for 1853:

Josiah Hale, M. D., President.
J. S. Copes, M. D., First Vice-president
Albert W. Ely, M. D., Second Vice-president
I. L. Crawcour, M. D., Corresponding Secretary
W. B. Lindsay, M. D., Recording Secretary
Henry Hughes, M. D., Treasurer

Edward C. Bolton, Librarian
D. F. Mitchell, Curator

The Academy seems to have been very active from the time of its organization to the outbreak of the War between the States. Among the interesting papers presented before it were Dr. Barton's "Report to the Academy of Sciences of New Orleans on the Meteorology and Mortality of New Orleans for the Year 1854" and his "Cause and Prevention of Yellow Fever at New Orleans and Other Cities in America."

The following officers and committee chairmen are listed for the year 1859-1860:

Prof. J. L. Riddell, A. M., M. D., President

J. S. Copes, M. D., Wm. B. Lindsay, M. D., Vice-presidents

Prof. A. Vallas, Corresponding Secretary

Noah B. Benedick, M. D., Recording Secretary

James B. Durand, Registrar

James K. Bailey, Treasurer

R. C. Kerr, Librarian

Dr. J. S. Knapp and Henry Cline, Curators

Chairmen of Scientific Sections, 1859-1860—

Natural History of Animals—Dr. T. G. Richardson

Botany—Prof. J. L. Riddell

Geology and Mineralogy—P. H. Skipwith, Esq.

Chemistry and Natural Philosophy—Prof. I. L. Crawcour

Astronomy and Mathematics—Prof. A. Vallas

Antiquarian Researches and Ethnology—Dr. J. S. Copes

History and Biography — Hon. Charles Gayarré

Philology—Prof. John Mannair

Medicine and Physiology — Dr. N. B. Benedick

Geography, Statistics and Meteorology—Prof. J. D. B. DeBow

Psychology and Aesthetics—Dr. Samuel A. Cartwright

Agriculture—Dr. W. B. Lindsay

Jurisprudence and Political Economy—P. E. Bonford, Esq.

THE THIRD SOCIÉTÉ MÉDICALE DE LA NOUVELLE ORLÉANS

The Société Médicale de la Nouvelle Orléans was reorganized for the third time in 1859, and the Journal de la Société Médicale de la Nouvelle Orléans was then revived and was published for two volumes. A discourse by Dr. Charles Delery[47] at the first meeting voiced the hope that the new society would do as much good as its predecessors, but his pious wishes were not fulfilled, for the outbreak of the war put an end to all such activities. Almost all that remains of the third French medical society is the list of members, who were:[48]

Drs. D. Alpuente, O. Anfoux, M. P. Avila, Barthe, H. Bayon, J. Beugnot, E. Boulin, Borde, J. A. Cantrelle, H. Durel, H. C. D'Aquin, C. Delery, A. de Roaldes, E. Doumeing, De St. Romes, C. Faget, Ferrier (père), Ferrier (fils), Tegewisch, A. Joubert, A. Kohn, J. Labatut, Langebacker, A. Le Mat, G. LeMonnier, H. Lewis, S. Martin, B. Maas, Arm, Mercier, E. B. Marmillion, A. Natilli, Rouanet, H. Rance, P. L. Janey, Thiery.

THE NATCHITOCHES MEDICO-CHIRURGICAL SOCIETY

Not very much is known of the other societies which were active in the state outside of New Orleans in the years immediately before the war broke out. Thus nothing is known of the Natchitoches Medico-Chirurgical Society except that it applied for admission at the last annual session of the Louisiana State Medical Society. It is not even clear whether it was admitted.

THE MEDICAL ASSOCIATION OF NORTH LOUISIANA

The Medical Association of North Louisiana was organized at Shreveport, November 26, 1855. A constitution was adopted and a committee on cases, reports and essays was appointed, part of whose duty was to prepare scientific articles for publication. The only record which exists of the further activity of the society is that a year after its organization a paper on scarlet fever, written by Dr. J. D. Harper, and a paper entitled "Physiology and

Phrenology Compared," written by Dr. Drury Lacy, were submitted to the New Orleans Medical and Surgical Journal.[49]

THE PHYSICO-MEDICAL SOCIETY OF BATON ROUGE

The only record of the Physico-Medical Society of Baton Rouge is the Act of Incorporation,[50] which reads as follows:

"Sec. 1. Be it enacted by the Senate and House of Representatives of the State of Louisiana in General Assembly convened, that L. L. Laycock, Thomas J. Buffington, F. J. B. Romer, Richard H. Day, S. P. Ward, R. C. White, Timothy Fay, J. M. Williams, G. W. Dearing, John Perkins, J. W. P. McGimsey, P. W. Ender, B. Jourdan, T. B. R. Hatch, Louis Chippers, George A. Pike and others of said society shall from and after the date of this act, be and they are thereby constituted a body politic in deed and in law, which shall be entitled the Physico-Medical Society of Baton Rouge.

"Sec. 2. Be it further enacted . . . (Granted powers of corporation).

"Sec 3. (Society confirmed to certain object).

John M. Sandige
Speaker of the House of Rep.
Robert C. Wickliff
President of the Senate
P. O. Hebert
Governor

Approved
February 26, 1855"

THE HOUMA SCIENTIFIC ASSOCIATION

Under the heading of "Books and Pamphlets" the New Orleans Medical and Surgical Journal in 1859 carried a notice of the receipt of the "Constitution and By-Laws of the Houma Scientific Association, 1859. From T. A. Woods Esq., Corresponding Secretary." Nothing else is known of this organization.[51]

THE MEDICAL INSTITUTE OF THE PARISH OF ST. LANDRY

The last of the Parish societies to organize before the outbreak of war was the Medical Institute of the Parish of St. Landry, whose act of incorporation[52] reads as follows:

"Acts passed at the Fifth Legislature of the State of Louisiana at its second Session.

J. M. Taylor, 1861, p. 126-7

No. 165. An Act to incorporate the Medical Institution of the Parish of St. Landry.

Sec. 1. Be it enacted by the Senate and House of Representatives of the State of Louisiana in General Assembly, that Doltas George Hill, C. D. Talman, Eugene Pilate, Edward C. E. Pilate, John Taylor, R. H. Littell, E. J. Plamer, J. B. Lee, Wm. J. Offut, James Rayand, T. A. Cook, and all other persons who may be hereafter legally associated with them be, and they are thereby created a body corporate under the title of the St. Landry Medical and surgical Association . . .

Sec. 2. (Powers of Corporation)

C. H. Morrison
Speaker of House of Rep.
Henry M. Hyams
Lieutenant Governor
Thos. O. Moore
Governor

Approved
March 18, 1861"

CONCLUSION

This, then, is the rather confused history of medical organizations in Louisiana prior to the outbreak of the War Between the States in April, 1861. During the troubled years of the war there was naturally no time and no thought for such matters and immediately after the fighting ended the whole South was of necessity too engrossed with other concerns to resume immediately thought of anything not of vital importance to mere subsistence.

What happened when Louisiana was free to turn to reorganization in the medical field has been ably told by Dr. Fossier and others. It was not until 1878, however, that the Orleans Parish Medical Society, as it now exists, was formed, and that attempts to reorganize the Louisiana State Medical Society were again begun.

It will be noted that certain names occur and recur in the lists of officers, members and orators of the various medical societies which are the subject of this communica-

tion. Some of these names are easily recognizable, for their descendants are numbered among the present generation of medical practitioners in Louisiana. Readers who are particularly interested in these physicians as individuals are referred to the excellent studies of Dr. E. A. Fossier,[1, 53] Dr. Edmond Souchon,[54] and Dr. Rudolph Matas[55] on the physicians of the state.

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NEW ORLEANS
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Established 1844

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CANCER—MATERNAL WELFARE—MENTAL HEALTH

Three of the activities of the State Medical Society functioning through special committees deserve to be mentioned here because of the importance of the work that they are conducting.

The Committee on Cancer has been most active this past year. It has publicized and spread widely information concerning cancer through radio, through articles both in the lay and medical press, and through talks to lay groups within the State. This Committee reported to the House of Delegates at the meeting in May but of course were unable to point out all of their accomplishments throughout the State. It hardly needs to be reiterated what the Cancer Committee is doing; it is extremely important. It is only through early diagnosis and early recognition of the symptoms of this dreaded disease that it can be cured.

The Committee on Maternal Welfare is another committee that has given much thought to the ever-present problem which exists here in Louisiana, in fact throughout the South, of a death rate higher than it is in most states of the Union and higher than it is in many of the European countries. The House of Delegates in appointing this Committee has recognized the importance of this problem and we believe the Committee will be enabled, through the work it is now doing, to reduce materially the number of deaths in pregnant women.

The Committee on Mental Health has some excellent recommendations to make to the House of Delegates which it is hoped will be put into effect through the instrumentality of the Committee on Legislation through their contact with the executive and legislative branches of the government. Specifically this Committee recommended an adequate psychopathic department at Charity Hospital for patients with temporary mental conditions; the development of a centralized medical commission with supervision over all state hospitals, homes and colonies, plus the institution of civil service of the medical staffs of these medical institutions; increase and improve facilities for feeble-minded colonies; make additional provisions for the care of epileptics; provide for private hospitals with proper supervision by the centralized medical commission; provide for parish judges to have access to trained psychiatric advice; and to provide psychiatric assistance to the coroners of the larger towns. If these recommendations can be carried out much good should ensue. There is no question in the first place that the facilities for the care of the insane in the State of

Louisiana are inadequate. The same applies to the epileptics. Improvement of medico-legal procedures should be put into effect as promptly as possible in order to enable the legal aspects connected with mental disease to be carried out in an intelligent and sensible manner.

MEDICAL PREPAREDNESS

It has been thought advisable again to remind the members of the State Medical Society concerning the problem of medical preparedness. At the recent meeting of the American Medical Association in New York representatives of the Surgeon General's office presented a plan whereby medical men of the country would be organized so that in the event of war the profession would be ready to carry on without dislocation of civil practice and at the same time have men assigned to medical service who would be prepared adequately to take care of their particular assignment. This plan, subject to certain modifications, was accepted unanimously by the American Medical Association through a resolution presented by the Chairman of the Board of Trustees. In pursuance of this plan, the headquarters office of the Association promptly and immediately began to prepare for the registration of all physicians in the country. Within a very few weeks there was sent to all medical men a questionnaire concerning important factual information regarding each individual. About fifty per cent of the doctors of the country have already filled out and returned the questionnaire.

It is of extreme importance that all physicians carry out the request of the American Medical Association, through its House of Delegates, to fill out and submit promptly the completed questionnaire. Every doctor who has not done this, should do so immediately. If the questionnaire has not been received, please communicate with the Committee on Medical Preparedness of the American Medical Association and ask for the form.

The response met so far indicates that the medical profession is going to back up the effort to obtain good medical service for the army should it be necessary to provide civil doctors. The American medical profession has always responded nobly and promptly to the needs of its country as witnessed by the large number of men who gave up homes and practice and went away to the last war. If war should come to the United States, God forbid, we men of medicine should be prepared to do our utmost for this great democratic country in which we live.

SULFAPYRIDINE IN PNEUMONIA

It may be that we have harped too frequently on the use of sulfapyridine in pneumonia. The astoundingly brilliant, often dramatic results of treatment with this drug, however, warrant extensive discussion of its use. While it is true that the reduction in the death rate has been spectacular it must not be forgotten that sulfapyridine after all is a drug which is extremely potent, which has not much more than passed the experimental stage and which is likely to produce serious toxic reactions. In substantiation of this last statement a recent publication by Detweiler et al.* might be quoted. Although these authors had a relatively small series of patients, nevertheless their results concur with those published on much larger series. The death incidence in their group of 70 patients was five, practically all deaths occurring in elderly individuals. Complications were not reduced by this form of therapy. Of particular interest is the fact that 85 per cent of 90 patients had toxic manifestations. The milder toxic expressions were nausea and vomiting, frequently controlled by nicotinic acid; anorexia, headache, dizziness, cyanosis and facial twitching. None of these of course are of any particular moment. The serious complications consisted of oliguria, occurring in nine patients; anuria in three; gross hematuria in six; leukopenia in eight; anemia in six; cutaneous rashes in six and an occasional thermal reaction, or mental changes.

The kidney manifestations that are pro-

nounced should be treated by prompt withdrawal of the drug and large amounts of fluid given intravenously and by mouth. The anemia and the cutaneous rashes, while listed as being serious, remedied themselves very promptly, according to Detweiler, after the patient recovered and were not considered an indication for the cessation of treatment. The leukopenia apparently resulted in the death of one of his patients who developed agranulocytosis.

The important information regarding this presentation has to do primarily with watching the patient closely who is being given large doses of sulfapyridine, observing the urine and the blood count frequently. If heavy dosage is indicated or is being employed, then by all means the physician should be insistent upon the patient taking larger quantities of fluid and if unable to do so by mouth then the fluid should be given into the vein. Incidentally, intravenous use of sodium sulfapyridine should be employed only when patients cannot be given the drug by mouth.

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LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

TO ALL MEMBERS OF ORGANIZED MEDICINE IN LOUISIANA

Recently I have been honored by appointment as State Chairman of the Committee on Medical Preparedness to meet the present emergency. From time to time you will be acquainted, either personally or through the columns of the Journal, of further activities in connection with this work. Very shortly a state committee will be appointed, the function of which will be to conduct meetings on the subject of medical preparedness with the various district and parish medical societies or in whatever locality deemed advisable.

Every doctor in Louisiana is being sent a questionnaire regarding his present medical status and his future desires in relation to the medical work incident to the emergency. I beseech you to respond promptly by filling out this questionnaire and returning same to the American Medical Association as indicated. I am most desirous that the medical profession of this state respond in a truly patriotic and interested manner as they have always done in the past. Your cooperation is needed to make this movement a success.

C. Grenes Cole, M. D., President
Louisiana State Medical Society.

COMMITTEE ON CARE OF THE INDIGENT PHYSICIAN

The Journal has received a communication from the Chairman of the Committee on Care of the Indigent Physician, enclosing a letter from a prominent New Orleans physician, wherein Dr. Weiss makes the following suggestion:

"It is my opinion that it would prove beneficial to the fund to give this letter space in the Journal. This being the first contribution to the fund for the care of the indigent physician, as a momento to the deceased, it might suggest similar contributions in the future."

The letter enclosed in the communication from Dr. Weiss, read very much as follows:

"Dear Dr. Weiss:

"Enclosed please find a check for the Indigent Physicians Fund. This is in memory of my mother who passed away last week and is given as partial appreciation for the services rendered by her physician.

"Yours very truly,
"Dr....."

BICENTENNIAL CONFERENCE OF THE UNIVERSITY OF PENNSYLVANIA

The Bicentennial Conference of the University of Pennsylvania will be held September 16-20 in Philadelphia. This conference will have to do with a variety of intellectual, professional and religious subjects. For the medical science, there has been prepared a series of outstanding presentations. Symposia will be held on nutrition, hypertension, cancer, virus research, intestinal obstruction, as well as many others.

The symposia will be participated in by outstanding medical scientists and clinicians from all over the United States.

UNITED STATES PUBLIC HEALTH SERVICE

Surgeon Winfield K. Sharp, Jr., has been relieved from duty at New Orleans and has been ordered to Washington, for duty.

Assistant Surgeon William F. Powell has been relieved from duty at New Orleans and ordered to Washington.

Assistant Surgeon Arnold B. Kurlander has been relieved from duty in New Orleans and ordered to the Marine Hospital in Galveston.

Assistant Surgeon William J. Brown has been relieved from duty at New Orleans and ordered to proceed to Medical Center for Federal Prisoners, Springfield, Missouri, for duty.

Assistant Surgeon Robert L. Griffith has been ordered from New Orleans to U. S. Marine Hospital, Savannah, Georgia, for duty.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The Mississippi Valley Medical Society will meet at Hotel Fort Armstrong, Rock Island, Illinois, September 25-27.

The winner of the annual essay contest is Dr. John F. Casey, of Boston. The winner last year was Dr. Frederick F. Boyce, of New Orleans.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

Written examination will be held January 4, 1941 in various cities of the United States and Canada. For further information address Dr. Paul Titus, 1915 Highland Building, Pittsburgh, Pennsylvania.

WARNING

Physicians in Alabama and Tennessee have complained that a Mr. C. W. Myers, who claims to be representing F. A. Davis Company of Philadelphia, has taken orders for books, collected for them at the time and failed to deliver them.

He will probably attempt to continue his fraudulent operations in the southern states. Any information should be referred to the Better Business Bureau in your city or Philadelphia or to F. A. Davis Company, 1914 Cherry St., Philadelphia.

LOUISIANA STATE EMPLOYMENT SERVICE

Among the 180,000 persons who have registered with the New Orleans office of the Louisiana State Employment Service since its inception, thousands of professional and semi-professional workers are listed, together with many others who are trained and experienced as their assistants. This applies to the medical quite as well as to the legal, architectural, engineering or other professions.

In the process of employment turnover the recently unemployed are constantly being called to positions, and on the other hand many recently employed are being laid off. It is the object of the governmental employment offices throughout the nation to minimize such turnover by referring thoroughly satisfactory employees to all job-openings in every instance, so that (economic factors excepted) there will be no occasion, ordinarily, for further dismissals or reemployment.

Specifically, we stand ready to refer to the members of the medical profession, whether for private office, clinic, or hospital service, the qualified type of employees they require; receptionist, office assistants, laboratory technicians, registered nurses, practical nurses, and the like.

We carefully check past records of our registrants, and refer to you, at your request, only those known to be thoroughly competent and qualified in every other way.

We list below a few of our desirable applicants:

WOMEN

Medical Stenographer: Single, aged 28. 7 years experience in secretarial and stenographic work, including 3 years with dental clinic of local university. Intelligent. Nice personality. Will accept temporary or permanent employment.

Ask for applicant 4-1

Doctor's Office Assistant: Trim, neat appearing young woman of 34. 8 months recent experience as general clerk and assistant in a physician's office. Some experience as office clerk in clinic of large local hospital. Has personality and initiative.

Ask for applicant 4-2

Trained Nurse: Graduate of Charity Hospital. 4 years institutional experience and 7 months general private duty. Member Louisiana Nurses' Association. Petite brunette type. Well groomed, aged 26.

Ask for applicant 4-3

Practical Nurse: Settled woman, pleasant, intelligent. 1½ years institutional training. Has handled paralysis, diabetes, broken hip, nervous cases in aged group; also obstetrical work and infant care. Gives applications, simple massage; enemas; and keeps physicians' charts. Take double duty; handle any type case. Excellent references. Reasonable wage.

Ask for applicant 4-4

MEN

Physician: Age 49. For past 5 years examining physician for government agency, some general practice. For 11 years specialized in diagnosis and treatment of skin diseases. Several years experience as teacher of dermatology at medical schools.

Ask for applicant 4-5

Medical and Surgical Technician: Age 22 years. 4 years experience as laboratory assistant while attending school, pre-med work, tissue structure, 3 years, B. S. degree.

Ask for applicant 4-6

Graduate Nurse: Age 27. Married. Past year acting as cancer research assistant in medical school. 4 years experience as nurse at first aid station for government. 1½ years as undergraduate nurse in army hospital.

Ask for applicant 4-7

Practical Nurse: Man of 37; clean, quiet, pleasant. Speaks English, French. Well trained hospital orderly. Keeps charts; gives enemas; can catheterize. Experienced in cases of paralysis, arthritis, meningitis, cancer, typhoid, tuberculosis, mental disorder. Adequate private home experience. Take double duty; leave city, if required. Reasonable wage. Excellent references.

Ask for applicant 4-8

Louisiana Department of Labor
Louisiana State Employment Service
826 Perdido Street, MAg. 5041

INFECTIOUS DISEASES IN LOUISIANA

For the week ending July 20, according to the report of the Bureau of Epidemiology of the Louisiana State Board of Health, the number of hook worm cases jumped from a yearly average of approximately five per week to 297 reported cases. Evidently there has been some type of survey in this state to determine the incidence of worm infestation. Other diseases reported in numbers greater than ten include 135 cases of syphilis, 45 of pneumonia, 43 of cancer, 31 of pulmonary tuberculosis, 28 of typhoid fever, 27 of gonorrhea, 23 of malaria. During this week there was apparently an epidemic of poliomyelitis in DeSoto Parish where seven cases were reported. The typhoid fever cases were scattered throughout the state, no parish having more than four instances. The next week syphilis regained its usual place at the head of the list with 367 cases, followed in order by 39 cases of cancer, 37 of pulmonary tuberculosis and of typhoid fever, 32 of pneumonia, 26 of gonorrhea, 18 of malaria and 14 of whooping cough. During this week there were five additional cases of poliomyelitis reported from DeSoto Parish, two from Caddo and one from Orleans. There were also listed this week six cases of typhus fever. The typhoid fever patients were disseminated throughout the state; Franklin Parish, with four instances, was the only parish with more than three cases. For the thirty-first week of the year, ending August 3, there were listed in figures greater than ten, the following diseases: 206 cases of syphilis, 20 of cancer, 16 of typhoid fever, 15 of measles, 14 of gonorrhea, 12 of pulmonary tuberculosis, 11 of poliomyelitis and 10 of pneumonia. The poliomyelitis cases were scattered throughout the state, however there were five of them in New Orleans; Lafourche Parish was the only other parish to have more than one case. The State Board of Health called attention to the fact that there were 29 cases reported during the month of July, a very large number, and that physicians are requested to report all suspected cases to the health authorities immediately. Isolation of cases or suspected cases is important. For the thirty-second week of the year, which ended August 10, the following were the diseases most frequently reported: 86 cases of syphilis, 35 of pulmonary tuberculosis, 27 of whooping cough, 22 of pneumonia, 20 of gonorrhea, 19 of cancer, 16 of malaria and 14 of typhoid fever. The typhoid fever cases were scattered throughout the state, no one community having a large number, however this week of the five cases of poliomyelitis reported, four originated in Iberia Parish. For the last week for which we have a report and which terminated August 17, there were listed 426 cases of syphilis, 38 of malaria, 36 of typhoid fever, 34 of pulmonary tuberculosis, 25 of cancer, and 21 each of gonorrhea and pneumonia. The four cases of poliomyelitis reported this week originated one each in Caddo, Claiborne, Grant and Webster Parishes. It is to be noted that 11 of the 36 cases of typhoid fever came from East Carroll Parish; West Carroll and Tensas Parish each had four cases. There were also reported this week four cases of typhus fever, one each from Acadia, Ascension, Calcasieu and Lincoln Parishes.

HEALTH OF NEW ORLEANS

The Department of Commerce, Bureau of the Census, reported that for the week ending July 13 there were only 120 deaths in the City of New Orleans, 76 of which occurred in the white population and 44 in the negro. Eleven of these deaths were in infants under one year of age, proportionately divided in practically the same ratio as the total number of deaths. The following week, which terminated July 20, saw a fairly sharp increase in the number of deaths largely due to an increase in negro deaths to 69 as contrasted with 44 the previous week The number of white individuals who died this week was only four greater than the previous week. This increase may be in part explained by the large number of deaths in infants, under one year of age. Of these deaths, twenty in number, twelve were negro children. For the week ending July 27 there occurred 176 deaths in the city of New Orleans, divided 106 white and 70 negro; 20 of these deaths being in children under one year of age, 11 of which were negro. There was a very sharp diminution in the number of deaths for the week ending August 3, there being only 101 citizens of New Orleans expiring in that particular week as contrasted with a three year average of 154. Sixty of these deaths occurred in white individuals and 41 in negroes, with 12 infant deaths. There was some increase in the week ending August 10 but still well below the three year average. This week there were 92 white and 42 negro deaths, making a total of 134. Seventeen of these deaths occurred in children under one year of age.

CORRESPONDENCE

New Orleans Medical and Surgical Journal
1430 Tulane Avenue
New Orleans, Louisiana

Gentlemen:

Permit me to correct an error in your issue of June, 1940, page 728, wherein the statement is made that Mrs. Oscar Dowling organized the Woman's Auxiliary of our State Society. The truth of the matter is that following my resolution which passed the House of Delegates in 1929, the Auxiliary was organized by Mrs. Herold with the support of Dr. Gouaux, President-elect and me as Past President. Mrs. Dowling, who was absent from the meeting, was elected the first President and, with the assistance of the late lamented Dr. Dowling, we prevailed upon her to accept the position.

This correction is made by me in order to keep the records straight, as I am very proud of being a "Godfather" to the Woman's Auxiliary.

Sincerely yours,
Arthur A. Herold, M. D.

New Orleans Medical and Surgical Journal
1430 Tulane Ave.
New Orleans, La.

Dear Sir:

I have had an experience in the last month which I wish to tell you so that others may profit by my ill fortune.

Some short time ago a man posing as a special agent of the Mutual Benefit Health and Accident Insurance Company of Omaha, with whom I already have a policy, called at my office and presented convincing credentials and thereupon sold me a policy covering hospitalization for my wife and small son. He took a check made out to him as "special agent" and gave me a receipt on the company's official form.

When I did not receive the policy in due time I wrote the company and they informed me that he was not with them at this time and had been guilty and charged with operating similar enterprises in other communities among the medical profession who already had policies bona fide, with their concern.

So much for that. He is dark, about 35-40, weight about 200-225, nearly 6 ft. tall and called himself "Amos L. Rogers" in my presence. He appears to be prosperous and well kept and has a good many insurances of which he claims to be special agent. He is operating in the Gulf Coast states so the Mutual says and I wish this to be published so others may take heed of this man's dishonesty.

Thank you.

M. L. Levy, M. D.,
Jonesville, La.

WOMAN'S AUXILIARY

Louisiana State Medical Society

President—Mrs. Roy Carl Young, Covington.

President-elect—Mrs. Aynaud Hébert, New Orleans.

First Vice-president—Mrs. Joseph E. Heard, Shreveport.

Second Vice-president—Mrs. W. A. Ellender, Houma.

Third Vice-president—Mrs. M. H. Foster, Alexandria.

Fourth Vice-president—Mrs. C. P. Gray, Monroe.

Treasurer—Mrs. M. C. Wiginton, Hammond.

Recording Secretary—Mrs. P. A. Donaldson, Reserve.

Corresponding Secretary—Mrs. Herbert Cannon, Covington.

PARISH PRESIDENTS

Beauregard, Mrs. John D. Frazar, DeRidder; Caddo, Mrs. C. B. Erickson, Shreveport; Calcasieu, Mrs. R. P. Howell, Lake Charles; Iberville, Mrs. Melvin A. Schudmak, White Castle; Jefferson Davis, Mrs. John G. McClure, Welsh; Lafayette, Mrs. L. A. Prejean, Scott; Lafourche, Mrs. Leo J. Kerne, Thibodaux; Natchitoches, Mrs. Joseph Bath, Natchitoches; Orleans, Mrs. Aynaud F. Hébert, New Orleans; Ouachita, Mrs. A. D. Tisdale, Monroe; Rapides, Mrs. L. D. Gremillion, Alexandria; St. Landry, Mrs. Edwin L. Landry, Opelousas; St. Mary, Mrs. T. E. Dreher, Morgan City; St. Tammany, Mrs. Walter Simmons, Covington; Tangipahoa, Mrs. Valmont J. Gautreaux, Hammond; Terrebonne, Mrs. Saul F. Landry, Houma; Vermilion, Mrs. Robert J. Young, Abbeville; Washington, Mrs. W. C. Brown, Franklinton; Webster, Mrs. B. L. Cook, Minden; Second District, Mrs. J. E. Clayton, Norco.

EXHIBITS AT A. M. A. MEETING

The exhibits of the various states at the meeting of the Woman's Auxiliary to the American Medical Association are most interesting and informative and are, to those not cognizant of the effort and thought put into them, a distinct surprise. Of course, the aim and purpose of these exhibits is to show in a pictorial way the projects and accomplishments of the state auxiliaries and their component parts, the county auxiliaries.

To the officers, they afford an opportunity to easily review the work of each state that they may compare the activities of the auxiliaries in the various sections of the country and thus judge which sections need the most help. To the delegates and state presidents it gives an opportunity to carry away with them a mental picture that

is valuable in encouraging some state auxiliaries to improve their work and to others it offers new ideas to take home to their members. There is another group to which this phase of our work makes an appeal. I refer to those members who are unwilling to sit and listen to reports read, but are thrilled to be able to go through a scrap book, study a map or a poster and learn in a short time the work that an auxiliary has accomplished. I hope some time in the near future we shall have state reports filed and published and the exhibits carefully studied and appreciated by those attending the meeting. This will then give us more time to devote to new business and discussions of how to improve our organization and will also shorten and enliven our business sessions. This end will never be attained, however, until all the auxiliary members become aware of the importance of the exhibits and are willing to put more time, more thought, more effort and more money into them.

Thirty-seven states out of thirty-eight states having auxiliaries sent exhibits this year, which is, I think, the best response we have ever had to the urgent appeal of our National Exhibits Chairman that every state be represented. A registration book is kept at the entrance to the room housing the exhibits and each person entering is requested to register. I have not the figures for the last two years, but in San Francisco five hundred thirty-seven signed this register and I feel certain that more have signed it the last two years.

The exhibit room has also become more or less a social center. You often hear the remark: "Meet me in the exhibit room, for then if you are late I shall be pleasantly occupied." This year, owing to the fact that the meeting was held in New York, there was no "tea" in the exhibit room. Nearly every year during the past few years there has been one and it has been a most delightful affair; listening to soft music and eating light refreshments while being entertained and fascinated by the clever and arresting way in which many of the auxiliaries have pictured the work they are doing.

The three most popular forms followed by most of the auxiliaries are maps, posters and scrap books, but of course there are other ways of showing their activities.

New York this year had a replica of the indigent physician's home. It was a colonial house, completely furnished in miniature with a fairy on the chimney top and it was placed on a green grass base. Helping with the up-keep of this home, its furnishings and its occupants is one of the major projects of this state.

Texas this year had one of the most out-standing and unusual exhibits. It consisted of a revolving hexagon of wood painted to show scenes. Each section portrayed one of the following activities: 1. Philanthropic. 2. Health goodness, giving to outstretched hands. 3. Health education. 4. Social, banquets and dance activities. 5. Physical examinations to adults and children. 6. Public relations, operating room scene.

The scrap books are in many instances works of art. One from Washington State was especially lovely and was done entirely by a doctor's wife. The covers were made of wood, hand carved, and pictured such things as a doctor in the horse and buggy days. The covers were bound in raw hide.

The maps were all different, each bringing out its story in a definite way. Tennessee, for example, had a folder of county and state activities, cut out of cardboard, shaped to form the state.

I should like to go on and tell you about each and every one of the thirty-seven exhibits for, as you have learned from the above, I am enthusiastic about them, but I know this article is already too long. I shall just touch on the exhibit of our own state. It consisted of one large poster, displaying a doctor's prescription blank and a small doctor's bag completely outfitted and seven small posters, each showing an auxiliary activity. With these there were also seven samples of products native to our state. This exhibit was admired by many.

I believe that this phase of our auxiliary work is in its infancy, but I do feel that its potentialities are tremendous. It has been difficult to write about what one really must see to appreciate, but I do hope I have helped you to visualize, in a small way, at least the beauty and ingenuity that our national auxiliary exhibits display.

Signed: Mrs. Arthur A. Herold
Respectfully submitted,
Mrs. Jonas W. Rosenthal,
Chairman, Press and Publicity

BOOK REVIEWS

Clinical Roentgenology of the Alimentary Tract: By Jacob Buckstein, M. D. Philadelphia, W. B. Saunders Company, 1940. Pp. 652; 525 illus. Price $10.00.

The author of this volume has had twenty years experience in roentgenology of the alimentary tract at Bellevue Hospital in New York. During this time excellent opportunities existed for comparing the roentgen findings with those in the operating theater and in the autopsy room. The book is fairly complete and an effort has been made throughout to correlate etiology and pathology with the characteristic roentgen findings.

The variations in the roentgen appearances of the normal organs of the gastrointestinal tract are considered. Of value is the author's consideration of differential diagnosis relative to each clinical condition. Italics are employed to stress the points of importance throughout the book. Brief reports and reproductions of roentgenograms of illustrative cases are included.

This work consists of 58 chapters which are divided into eight main sections which consider the following: esophagus; stomach; duodenum; small intestine; large intestine; herniation and eventration of the diaphragm; gall bladder and bile ducts; spleen, liver and pancreas.

This volume is the latest contribution to gastroenterology and roentgenology and any physician interested in the study of the alimentary tract should find it very helpful. The illustrations are excellent and the text is well written. The bibliography is indexed and fairly complete.

J. N. ANÉ, M. D.

Diseases of the Gall Bladder and Bile Ducts: By Waltman Walters, B. S., M. D., M. S. in Surgery, Sc. D., F. A. S. C., and Albert M. Snell, B. S., M. D., M. S. in Medicine, F. A. C. P. London, W. B. Saunders and Co., 1940. Pp. 645. Price $10.00.

It is seldom that one has the privilege of reviewing a volume which has so much to recommend it. The statements contained in this volume are based on experience and on experimental investigation. It may be accepted as authoritative as it represents the cooperative efforts of surgeons and medical clinicians, as well as laboratory workers. It may be considered as one of the best reference books on the subject published. Clinicians will find it a splendid ready reference volume.

The foreword is by the late Dr. Will Mayo. In a few pages Dr. Mayo summarizes the development of the present knowledge of gall bladder disease, and in his own characteristic way states: "Many interesting problems remain to be solved, and the joy of medicine is in tomorrow's answer."

The authors state in their preface: "We have attempted to confine our discussion so far as possible to such matters as are capable of direct practical application. We have had in mind the primary reason for coordinative and surgical practice which is to make available all present knowledge of whatever type, to the individual physician."

In the chapter on anatomy, reference is made to the anatomic variations of the ducts and the vascular supply to the biliary system. The authors refer those interested in this subject to the work of Flint, Eisendrath, and others. For the sake of brevity they have omitted details.

The chapters on the formation of stone, diagnostic methods, and the value of duodenal drainage are particularly interesting and are worthy of careful study.

The chapter by Kirklin on cholecystography is clear, concise, and instructive. This chapter is made particularly valuable because the details of procedure and the significance of the findings following properly done cholecystography are clearly stated.

A great deal of attention is devoted to conditions associated with jaundice, and problems arising as a result of jaundice. The clinical laboratory phenomena which are of diagnostic and prognostic value are explained.

The chapters on medical and surgical treatment of gallbladder disease are of special interest as they emphasize the need for cooperative management of problems involved. There are excellent chapters on vitamin therapy, preoperative and postoperative management, symptoms and complications of gallbladder disease. There is a chapter on technic in the operating room written by Sister Mary Williams of St. Mary's Hospital; this chapter should prove of interest to all operating room supervisors.

This volume will remain a classic of present day knowledge and management of gallbladder disease.

ISIDORE COHN, M. D.

The Management of Obstetric Difficulties: By Paul Titus, M. D. St. Louis, C. V. Mosby Co., 1940. Pp. 968.

The widespread acceptance of the first edition necessitated a new volume into which has been added new descriptive material on x-ray technic, anemia of pregnancy, and the use of sulfanilamide in puerperal sepsis and urinary tract infections. The original part of the book with its clear cut description and treatment of the various abnormalities of obstetrics is retained and serves as an excellent reference.

Particularly noteworthy and of extreme value is the author's description of religious and social problems which so frequently attend obstetric difficulties, and suggestions as to the correct form of dealing with these problems.

HARRY MEYER, M. D.

Surgical Diagnosis: By Stephen Power, M. S. (Lond.), F. R. C. S. (Eng.). Baltimore, Williams & Wilkins Company, 1939. Pp. 228. Price 12s. 6d.

This author divides the considerations of surgical diagnostic problems according to anatomic regions. This book is brief, even short, for such an objective and in this brevity lies one of its main faults. Without much hesitation it might be regarded as cursory and incomplete. There are few illustrations (51). The style, like most English texts, makes reading easy, but this scarcely replaces the lack of detail and definiteness. The

highlights and general principles of a subject are covered, but the book is inadequate for a student text or reference.

HOWARD MAHORNER, M. D.

The Newer Nutrition in Pediatric Practice: By I. Newton Kugelmass, B. S., M. A., M. D., Ph. D., Sc. D. Philadelphia, J. B. Lippincott Co., 1940. Pp. 1155. Price $10.00.

This is a detailed reference book on nutrition. It is divided into three sections, namely: nutritional physiology, nutrition in health, and nutrition in disease. The author goes into great detail in all his sections and has incorporated all of the latest and new ideas of diet in both health and disease in the entire field of clinical pediatrics. He has laid stress on the place of vitamins in all the diseases, their need and the dosage.

The reviewer thinks this book would be of value to the general practitioner or to the pediatrician who is not in a position to attend symposia on the newer ideas of diet.

SUZANNE SCHAEFER, M. D.

Frontier Doctor: By Urling C. Coe, M. D. New York, Macmillan Company, 1939. Pp. 264. Price $2.50.

This is a fascinating presentation of the experiences of a doctor when there was truly a frontier. Living 120 miles from the nearest railroad, his clientele extended as far as 85 miles from his home town so that it was nothing unusual for him to make a trip in one direction of 40 miles by horse and buggy, to return home and go 30 miles in the opposite. The book will interest the doctor; undoubtedly it will be of great interest to any layman who is interested in the experiences of a real man who was a physician. Other comments about this book have been made in the editorial section of the journal.

J. H. MUSSER, M. D.

Health at Fifty: Edited by William H. Robey. Cambridge, Mass., Harvard University Press, 1939. Pp. 299. Price $3.00.

A compilation of lectures given by members of the Faculty of the Medical School of Harvard to Sunday afternoon audiences, condensed in book form, is certainly well worth any patient's time, even if he or she has not reached the sixth decade. The subjects treated in this book are those which apparently have the greatest appeal to the general public.

The presentation of material is clear and in a fashion the majority of the laity can grasp without too much pensive thought. All of the advice and recommendations given are thorough and complete yet presented in such a manner that the reader would certainly not become organ or health conscious. Clarification of medical terminology is one of the oustanding features of the book.

OSCAR BLITZ, M. D.

The Essentials of Applied Medical Laboratory Technic: By J. M. Feder, M. D. Charlotte, N. C., Charlotte Medical Press, 1940. Pp. 234. Price $5.00.

Dr. Feder, as he says in his preface, has prepared this book to aid the physician, small hospital and small clinic in maintaining at minimum cost, an efficient laboratory unit. With this end in view he gives standard methods for many procedures in laboratory work. They are stated in detail and are accompanied by many sketches and photographs. Emphasis is placed on economy and simplicity. In many instances the commercial brands most advisable are mentioned. The book could be used without confusion by a technician with minimum training. It does not include technics for determining sulfanilamide and sulfapyridine blood levels, without which no hospital laboratory today is complete, and there are various typographic errors—some of which are serious.

On the whole, Dr. Feder has made good use of his long experience in laboratory work in a small general hospital.

ELIZABETH E. MUNGER, A. B.

PUBLICATIONS RECEIVED

The Johns Hopkins Press, Baltimore: Medical Work of the Knights Hospitaliers of Saint John of Jerusalem, by Edgar Erskine Hume, Lieutenant-Colonel, Medical Corps, United States Army, Knight of Honor and Devotion of the Sovereign Military Order of Malta. The Chinese Way in Medicine, by Edward H. Hume.

Lea & Febiger, Philadelphia: Physical Diagnosis, by William Nance Anderson, B. Sc., M. D. Pharmacology and Therapeutics, by Arthur R. Cushny, M. A., M. D., LL. D., F. R. S., thoroughly revised by C. W. Edmunds, A. B., M. D., and J. A. Gunn, M. D., D. Sc., F. R. C. P.

The Macmillan Company, New York City: Getting Ready to be a Mother (Fourth Edition), by Carolyn Van Blarcom, R. N., revised by Hazel Corbin, R. N.

The C. V. Mosby Company, St. Louis: Applied Pharmacology, by Hugh Alister McGuigan, Ph. D., M. D., F. A. C. P.

The Rockefeller Foundation, New York: Annual Report, 1939.

W. B. Saunders Company, Philadelphia: Gynecological and Obstetrical Pathology, by Emil Novak, A. B., M. D., D. Sc. (Hon. Dublin), F. A. C. S.

Charles C. Thomas, Springfield, Ill.: Atlas of Cardioroentgenology, by Hugo Roesler, M. D., F. A. C. P.

The Williams & Wilkins Company, Baltimore: Manson's Tropical Diseases, edited by Philip H. Manson-Bahr, C. M. G., D. S. O., M. A., M. D., D. T. M. and H. Cantab., F. R. C. P. Lond.